

THE AMERICAN ECONOMIC REVIEW,

VOLUME LII

March 1962

NUMBER 1

ARTICLES

- Economists and the History of Ideas *P. A. Samuelson*
Research on Household Behavior *Robert Ferber*
The Soviet Price System *Morris Bornstein*
Forecasting with an Econometric Model *D. B. Suits*
Welfare Criteria and Changing Tastes *R. S. Weckstein*

REVIEW ARTICLE

- A Quarterly Econometric Model *Marc Nerlove*

COMMUNICATIONS

- For an Inflation-Proof Economy *Amotz Morag*
Credit Controls and Financial Intermediaries:
 Comment *M. E. Rozen*
 Reply *D. A. Alhadeff*
Variability in Earnings-Price Ratios:
 Comment *M. J. Gordon*
 Reply *Haskel Benishay*

The Journal of
THE AMERICAN ECONOMIC ASSOCIATION

14-15

THE AMERICAN ECONOMIC ASSOCIATION

Founded in 1885

OFFICERS

President

EDWARD S. MASON, Harvard University

President-elect

GOTTFRIED HABERLER, Harvard University

Vice-Presidents

ALBERT G. HART, Columbia University

RICHARD A. MUSGRAVE, Princeton University

Secretary-Treasurer and Editor of Proceedings

HAROLD F. WILLIAMSON, Northwestern University

Managing Editor of the American Economic Review

BERNARD F. HALEY, Stanford University

EXECUTIVE COMMITTEE

Elected Members of the Executive Committee

J. KENNETH GALBRAITH, Harvard University

RALPH A. YOUNG, Board of Governors, Federal Reserve System

EWAN CLAGUE, U. S. Department of Labor

CHARLES P. KINDLEBERGER, Massachusetts Institute of Technology

ROBERT TRIFFIN, Yale University

W. ALLEN WALLIS, University of Chicago

Ex-Officio Members

THEODORE W. SCHULTZ, University of Chicago

PAUL A. SAMUELSON, Massachusetts Institute of Technology

Publication and business office at Curtis Reed Plaza, Menasha, Wisconsin.

THE AMERICAN ECONOMIC REVIEW, including four quarterly numbers, the *Proceedings* of the annual meetings, the *Directory* and supplements, is published by the American Economic Association and is sent to all members five times a year, in March, May, June, September and December.

Membership dues of the Association are \$6.00 a year, \$5.00 of each year's dues being in payment of a year's subscription. Subscriptions to the REVIEW by nonmembers are \$6.00 a year. Single copies, \$1.50.

Correspondence relating to the *Papers and Proceedings*, the *Directory*, advertising, permission to quote, business matters, subscriptions, membership and changes of address may be sent to the secretary, Harold F. Williamson, Northwestern University, Evanston, Illinois. To be effective, notice of change of address must reach the secretary by the 15th of the month previous to the month of publication.

Second-class postage paid at Menasha, Wisconsin. Printed in U.S.A.

THE AMERICAN ECONOMIC REVIEW

VOLUME LII

BOARD OF EDITORS

MARTIN BRONFENBRENNER

ALBERT O. HIRSCHMAN

ALFRED E. KAHN

ROLAND N. MCKEAN

JOSEPH A. PECHMAN

MELVIN W. REDER

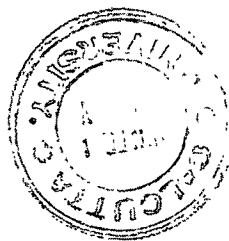
TIBOR SCITOVSKY

ROBERT SOLOW

MANAGING EDITOR

BERNARD F. HALEY

Canceled
3
8/6/86 391
.001



THE AMERICAN ECONOMIC ASSOCIATION

Executive Office: Evanston, Illinois

Editorial Office: Stanford University, Stanford, California

Expansion of the Firm, On the Theory of	W. J. BAUMOL	1078
Foreign Exchange Guarantees and the Dollar:		
Comment	R. Z. ALIBER	1112
Reply	S. T. BEZA AND G. PATTERSON	1117
The Golden Age in Solovia, The End of: A		
Further Fable for Growthmen Hoping to Be		
"One Up" on Oiko	I. F. PEARCE	1088
Comment	E. PHELPS	1097
Industrial Production, The Revised Index of	V. PERLO	496
Reply	C. GEHMAN	513
Inflation-Proof Economy, For an	A. MORAG	177
The Marginal Efficiency Function, The Elasticity		
of: Comment	O. E. WILLIAMSON	1099
Comment	L. ABBOTT	1104
Reply	L. TARSHIS	1110
Property Values, The Effect of Integration on	W. M. LADD	801
Stochastic Reserve Losses and Expansion of Bank		
Credit: Comment	H. L. MILLER, JR.	1118
Reply	D. ORR AND W. G. MELLON ...	1120

REVIEWS OF BOOKS:

ADELMAN, Theories of Economic Growth and Development, by E. McKinley	832
AGANBEGUAN, ARTAMONOV, IOFFE AND SHEYNIN, SSSR-S.Sh.A. (Tsifry i fakty)	
(USSR-U.S. Figures and Facts), by Sosnovy	253
AITKEN, American Capital and Canadian Resources, by W. C. Hood	841
AKERMAN, Theory of Industrialism: Causal Analysis and Economic Plans, by H. H.	
Villard	530
ALFANDARY-ALEXANDER, An Inquiry into Some Models of Inventory Systems, by	
H. L. Miller, Jr.	1178
ARNDT, EDITOR, Die Konzentration in der Wirtschaft, by J. R. Houssiaux	638
ASHER, HAGEN AND OTHERS, Development of the Emerging Countries: An Agenda	
for Research, by F. C. Shorter	851
AUBREY, Coexistence: Economic Challenge and Response, by A. I. Bloomfield	269
BACKMAN, The Economics of the Electrical Machinery Industry, by N. A. Mercer ..	1184
BALASSA, The Theory of Economic Integration, by J. C. Ingram	612
BALDWIN, Antitrust and the Changing Corporation, by I. M. Stelzer	889
BARNA, Investment and Growth Policies in British Industrial Firms, by K. Kurihara	831
BENHAM, Economic Aid to Underdeveloped Countries, by J. D. DeForest	1167
BENSON, The Economics of Public Education, by F. Shaw	1215
BERGSON, The Real National Income of Soviet Russia Since 1928, by A. Nove	559
BERNAT AND ENYEDI, A Magyar Mezogazdasag termeles: korzetel. I. A. szantofoldi	
novenytermeles korzetel (The Production Regions of Hungarian Agriculture. I.	
The Regions of Fieldhusbandry), by M. L. Szabo	859
BEVERIDGE, The London School of Economics and Its Problems, 1919-1937, by	
F. H. Kirkpatrick	645
BLOCH-LAINÉ AND DE VOCÜÉ, Le trésor public et le mouvement général des fonds,	
by C. Shoup	1165
BODENHORN, Intermediate Price Theory, by D. H. Gray	230
BOULDING, Conflict and Defense: A General Theory, by J. C. Harsanyi	903
BRADY, Organization, Automation, and Society—The Scientific Revolution in	
Industry, by W. Adams	1179
BRANDT, Preistheorie, by W. Hochwald	232
BREWIS, ENGLISH, SCOTT AND JEWITT, Canadian Economic Policy, by E. A.	
Anderson	246
PROVEDANI, Bases analíticas de la política monetaria, by V. Salera	601
BRUNSWICK AND SHEATSLEY, A Personal Interview Survey of College Economics	
Teachers, by H. R. Bowen	218

BRUS, Oglone problemy funkcjonowania gospodarki socjalistycznej (General Problems of the Functioning of the Socialist Economy), by A. Korbonski	591
BUCHANAN, Fiscal Theory and Political Economy: Selected Essays, by E. C. Brown	263
— AND TULLOCK, The Calculus of Consent: Logical Foundations of Constitutional Democracy, by M. Olson, Jr.	1217
CAIRNCROSS, Factors in Economic Development, by G. Meier	1142
CAMERON, France and the Economic Development of Europe, 1800-1914: Conquests of Peace and Seeds of War, by D. S. Landes	563
CARLSON, Economic Security in the United States, by J. Skeels	1213
CHAMBERLAIN, The Firm: Micro-Economic Planning and Action, by R. J. Mat- tessich	877
CHAMBERS, Economic Fluctuations and Forecasting, by H. B. Ernst	595
CHRISTENSON, Economic Redevelopment in Bituminous Coal: The Special Case of Technological Advance in United States Coal Mines, 1930-1960, by M. S. Baratz	1191
CLARK, Competition As a Dynamic Process, by M. W. Watkins (a review article)	1070
ČOBELJIČ, Politika i metodi privrednog razvoja Jugoslavije, by P. J. Meier	574
COHEN, Labor in the United States, by R. J. Ward	287
COOKE, The Role of Debt in the Economy, by M. A. Robinson	604
CORRY, Money, Savings and Investment in English Economics, 1800-1850, by D. Dillard	1156
COSTANZO, Programas de estabilización económica en América Latina, by R. R. Edminster	584
CRAMP, Opinion on Bank Rate, 1822-60, by D. Dillard	1156
DAVID, Family Composition and Consumption, by P. B. Simpson	1210
DAVIS, HUGHES AND McDUGALL, American Economic History: The Development of a National Economy, by J. W. Chisholm	583
DE NAVARRETE, La distribución del ingreso y el desarrollo económico de México, by L. Solis	250
DENISON, The Sources of Economic Growth in the United States and the Alterna- tives Before Us, by M. Abramovitz (a review article)	762
DEWHURST, COPPOCK, YATES AND ASSOCIATES, Europe's Needs and Resources, by M. Gilbert	836
DHAR AND LYDALL, The Role of Small Enterprises in Indian Economic Develop- ment, by G. Rosen	577
DONALDSON, Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity, by R. W. Mayer	628
DUCHINI, Il profitto nella teoria economica contemporanea, by A. S. Hall	546
EASTHAM, Graphical Economics, by D. A. Worcester	219
ECKSTEIN, YIN AND YIN, The National Income of Communist China, by Y. L. Wu	1145
EDWARDS AND BELL, The Theory and Measurement of Business Income, by C. A. Smith	271
EICHER, Consommation et épargne, by M. Cohen	556
EISENSTEIN, The Ideologies of Taxation, by T. J. Cauley	265
ELLIS, WITH WALLICH, EDITORS, Economic Development for Latin America, by A. Karasz	571
ERMAKOV, EDITOR, Ekonomicheskie zakony sotsializma i ikh ispol'zovanie (Eco- nomic Laws of Socialism and Their Utilization), by G. Grossman	547
FELLNER, GILBERT, HANSEN, AND OTHERS, The Problem of Rising Prices, by A. Smithies	535
FERGUSON AND KREPS, Principles of Economics, by S. N. Whitney	1125
FERGUSON, LERNER AND OTHERS, The Economic Value of the United States Mer- chant Marine, by W. Gorter	279
FISCHER, Bank Holding Companies, by G. W. Woodworth	870
FISHER, WITH KAYSEN, A Study in Econometrics: The Demand for Electricity in the United States, by A. Zellner	885
FISHMAN AND FISHMAN, The American Economy, by L. Blum	1126
FLORENCE, Post-War Investment, Location and Size of Plant, by K. Kurihara ...	831

FLORES, Tratado de economía agrícola, by J. O. Bray	894
FRANK, The European Common Market—An Analysis of Commercial Policy, by P. W. Bell	614
FRIEND AND JONES, EDITORS, Proceedings of the Conference on Consumption and Saving, by R. Stone	538
FROELICH, EDITOR, Land Tenure, Industrialization, and Social Stability: Ex- periences and Prospects in Asia, by H. T. Patrick	579
FUCHS, Changes in the Location of Manufacturing in the United States Since 1929, by H. S. Konijn	879
FULLER, The Gentlemen Conspirators: The Story of the Price-Fixers in the Elec- trical Industry, by N. A. Mercer	1184
GALBRAITH, Economic Development in Perspective, by G. Meier	1142
GANGEMI, Finanza pubblica, by K. Holbik	606
GANNAGÉ, Économie du développement, by J. Sheahan	1144
GERN, L'indexation des salaires: ses répercussions économiques, by H. W. Davey .	1204
GHOSH, The Financing of Economic Development, by F. C. Child	1163
GIERSCH, Allgemeine Wirtschaftspolitik—Grundlagen, by G. Grosschmid	1124
GITLOW, Economics, by B. J. Jones	810
GOLAY, The Philippines: Public Policy and National Economic Development, by B. Dorfman	252
GOODMAN, Industrial Materials in Canadian American Relations, by D. W. Slater	625
GOODRICH, CRANMER, RUBIN AND SEGAL, Canals and American Economic Develop- ment, by H. M. Gray	842
GORDON, The Investment, Financing and Valuation of the Corporation, by D. Bodenhorn	1174
GUÉNAULT AND JACKSON, The Control of Monopoly in the United Kingdom, by G. Rosenbluth	275
HABAKKUK, American and British Technology in the Nineteenth Century: The Search for Labour-Saving Inventions, by J. Schmookler	1134
HAMILTON, The Consumer in Our Economy, by V. Wyckoff	901
HANSEN, Foreign Trade Credits and Exchange Reserves—A Contribution to the Theory of International Capital Movements, by C. P. Kindleberger	608
HARRIS, EDITOR, The Dollar in Crisis, by H. K. Zassenhaus	615
HARTLE, The Employment Forecast Survey, by R. Ferber	1205
HASAN, Deficit Financing and Capital Formation—The Pakistan Experience, 1951-1959, by F. C. Child	1163
HATANAKA, The Workability of Input-Output Analysis, by A. Gosfield	553
HAX, Vertikale Preisbindung in der Markenartikelindustrie, by R. W. Gergner	276
HEADY, BAKER AND OTHERS, EDITORS, Agricultural Supply Functions—Estimating Techniques and Interpretation, by S. Hoos	283
HEADY AND DILLON, Agricultural Production Functions, by Z. Griliches	280
HEERTJE, De prijsvorming van consumptiegoederen op oligopolistische markten, by E. Thorbecke	550
HENDERSON, The Industrial Revolution in Europe, 1815-1914, by P. David	1137
HODGKINS, Soviet Power: Energy Resources, Production and Potentials, by F. G. Adams	285
HOLLAND, Dividends under the Income Tax, by E. R. Rolph	1161
HOLMANS, United States Fiscal Policy 1945-1959: Its Contribution to Economic Stability, by P. B. Prescott	605
IULO, Electric Utilities—Costs and Performance, by R. W. Harbeson	277
JANSSEN, Free Trade, Protection and Customs Union, by R. A. Mundell	621
JASNY, Soviet Industrialization, 1928-1952, by A. Erlich	846
JOHNSON, Canada in a Changing World Economy, by H. C. Eastman	1171
JONES AND GREBLER, The Secondary Mortgage Market, by H. Jones	868
JOSSA, Interesse, moneta e creditor, by G. Ackley	259
KALDO, Ensayos sobre desarrollo económico, by A. Basch	242
KATONA, LININGER, MORGAN, AND MUELLER, 1961 Survey of Consumer Finances, by P. B. Simpson	1210

THE AMERICAN ECONOMIC REVIEW

VOLUME LII

March 1962

NUMBER 1

ARTICLES

- 391
601
- Economists and the History of Ideas *P. A. Samuelson*
Research on Household Behavior *Robert Ferber*
The Soviet Price System *Joseph Bernstein*
Forecasting with the Aid of Computers *D. A. Suits*
Welfare and the Allocation of Scarce Resources *W. S. Weeks*

REVIEWS

- A Quarterly Econometric Review *Marc Verlore*

COMMUNICATIONS

- For an Inflation-Free Economy *Arnold Morag*
Credit Controls and Financial Intermediaries:
Comment *M. E. Rozen*
Reply *D. A. Alhadeff*
Variability in Earnings-Price Ratios:
Comment *M. J. Gordon*
Reply *Harold Benishay*

The Journal of
THE AMERICAN ECONOMIC ASSOCIATION

THE AMERICAN ECONOMIC REVIEW



LUMB LII

March 1962

NUMBER 1

ARTICLES

391
.001

Economists and the History of Ideas
Research on Household Behavior

P. A. Samuelson

Robert Ferber

The Soviet Price System

Morris Bornstein

Forecasting with an Econometric Model

D. B. Suits

Welfare Criteria and Changing Tastes

R. S. Weckstein

REVIEW ARTICLE

A Quarterly Econometric Model

Marc Nerlove

COMMUNICATIONS

For an Inflation-Proof Economy

Amotz Morag

Credit Controls and Financial Intermediaries:

Comment

M. E. Rozen

Reply

D. A. Alhadeff

Variability in Earnings-Price Ratios:

Comment

M. J. Gordon

Reply

Haskel Benishay

The Journal of
THE AMERICAN ECONOMIC ASSOCIATION

1V-2.15

THE AMERICAN ECONOMIC REVIEW

VOLUME LII

BOARD OF EDITORS

MARTIN BRONFENBRENNER

ALBERT O. HIRSCHMAN

ALFRED E. KAHN

ROLAND N. MCKEAN

JOSEPH A. PECHMAN

MELVIN W. REDER

TIBOR SCITOVSKY

ROBERT SOLOW

MANAGING EDITOR

BERNARD F. HALEY

Cancelled
3/18/86
391
.001



THE AMERICAN ECONOMIC ASSOCIATION

Executive Office: Evanston, Illinois

Editorial Office: Stanford University, Stanford, California

Copyright 1962
AMERICAN ECONOMIC ASSOCIATION

240214

CONTENTS

ARTICLES:

Consumption, Savings and Windfall Gains	M. G. REID	728
Czechoslovak Industrial Growth: 1949-59	G. J. STALLER	385
Economists and the History of Ideas	P. A. SAMUELSON	1
Entry, Gibrat's Law, Innovation, and the Growth of Firms	E. MANSFIELD	1023
Executive Incomes, Sales and Profits	J. W. MCGUIRE, J. S. Y. CHIU AND A. O. ELBING	753
The Firm under Regulatory Constraint, Behavior of	H. AVERCH AND L. L. JOHNSON	1052
Forecasting and Analysis with an Econometric Model	D. B. SUITS	104
Futures Markets and Prices, New Concepts Con- cerning	H. WORKING	431
Household Behavior, Research on	R. FERBER	19
Income and Employment Multipliers, and the Price Level	P. DAVIDSON	738
Monetary Theory and Policy	H. G. JOHNSON	335
Multilateral Balancing in International Trade	M. MICHAELY	685
The Production Function in Allocation and Growth: A Synthesis	M. FRANKEL	995
Seasonal Unemployment and Unemployment In- surance	J. O'CONNOR	460
Simulation of an Economy with Development and Trade Problems	E. P. HOLLAND	408
The Soviet Price System	M. BORNSTEIN	64
U.S. and Soviet Industrial Output, A Comparison of	A. TARN AND R. W. CAMPBELL	703
Welfare Criteria and Changing Tastes	R. S. WECKSTEIN	133

REVIEW ARTICLES:

Competition As a Dynamic Process	M. W. WATKINS	1070
Economic Growth in the United States	M. ABRAMOVITZ	762
Money and Credit	L. TARSHIS	472
A Quarterly Econometric Model for the United Kingdom	M. NERLOVE	154
The Theory of Capital	V. L. SMITH	481

COMMUNICATIONS:

The Analysis of Demand	A. P. LERNER	783
Mathematical Appendix	H. UZAWA	797
The Bethlehem-Youngstown Case and the Market-Share Criterion: Comment	D. D. MARTIN	522
Reply	L. S. KEYES	528
Credit Controls and Financial Intermediaries: Comment	M. E. ROZEN	185
Reply	D. A. ALHADEFF	194
Earnings-Price Ratios, Variability in: Comment	M. J. GORDON	203
Reply	H. BENISHAY	209
Economic Forecasting When the Subject of the Forecast Is Influenced by the Forecast	M. C. KEMP	492

Expansion of the Firm, On the Theory of	W. J. BAUMOL	1078
Foreign Exchange Guarantees and the Dollar:		
Comment	R. Z. ALIBER	1112
Reply	S. T. BEZA AND G. PATTERSON	1117
The Golden Age in Solovia, The End of: A		
Further Fable for Growthmen Hoping to Be		
"One Up" on Oiko	I. F. PEARCE	1088
Comment	E. PHELPS	1097
Industrial Production, The Revised Index of	V. PERLO	496
Reply	C. GEHMAN	513
Inflation-Proof Economy, For an	A. MORAG	177
The Marginal Efficiency Function, The Elasticity		
of: Comment	O. E. WILLIAMSON	1099
Comment	L. ABBOTT	1104
Reply	L. TARSHIS	1110
Property Values, The Effect of Integration on	W. M. LADD	801
Stochastic Reserve Losses and Expansion of Bank		
Credit: Comment	H. L. MILLER, JR.	1118
Reply	D. ORR AND W. G. MELLON ...	1120

REVIEWS OF BOOKS:

ADELMAN, Theories of Economic Growth and Development, by E. McKinley	832
AGANBEGUAN, ARTAMONOV, IOFFE AND SHEYNIN, SSSR-S.Sh.A. (Tsifry i fakty)	
(USSR-U.S. Figures and Facts), by Sosnovy	253
AITKEN, American Capital and Canadian Resources, by W. C. Hood	841
AKERMAN, Theory of Industrialism: Causal Analysis and Economic Plans, by H. H.	
Villard	530
ALFANDARY-ALEXANDER, An Inquiry into Some Models of Inventory Systems, by	
H. L. Miller, Jr.	1178
ARNDT, EDITOR, Die Konzentration in der Wirtschaft, by J. R. Houssiaux	638
ASHER, HAGEN AND OTHERS, Development of the Emerging Countries: An Agenda	
for Research, by F. C. Shorter	851
AUBREY, Coexistence: Economic Challenge and Response, by A. I. Bloomfield	269
Backman, The Economics of the Electrical Machinery Industry, by N. A. Mercer,	1184
BALASSA, The Theory of Economic Integration, by J. C. Ingram	612
BALDWIN, Antitrust and the Changing Corporation, by I. M. Stelzer	889
BARNA, Investment and Growth Policies in British Industrial Firms, by K. Kurihara	831
BENHAM, Economic Aid to Underdeveloped Countries, by J. D. DeForest	1167
BENSON, The Economics of Public Education, by F. Shaw	1215
BERGSON, The Real National Income of Soviet Russia Since 1928, by A. Nove	559
BERNAT AND ENYEDI, A Magyar Mezogazdasag termeles: korzetei. I. A szantofoldi	
novenytermeles korzetei (The Production Regions of Hungarian Agriculture. I.	
The Regions of Fieldhusbandry), by M. L. Szabo	859
BEVERIDGE, The London School of Economics and Its Problems, 1919-1937, by	
F. H. Kirkpatrick	645
BLOCH-LAINÉ AND DE VOGÜÉ, Le trésor public et le mouvement général des fonds,	
by C. Shoup	1165
BODENHORN, Intermediate Price Theory, by D. H. Gray	230
BOULDING, Conflict and Defense: A General Theory, by J. C. Harsanyi	903
BRADY, Organization, Automation, and Society—The Scientific Revolution in	
Industry, by W. Adams	1179
BRANDT, Preistheorie, by W. Hochwald	232
BREWIS, ENGLISH, SCOTT AND JEWITT, Canadian Economic Policy, by E. A.	
Anderson	246
PROVEDANI, Bases analíticas de la política monetaria, by V. Salera	601
BRUNSWICK AND SHEATSLEY, A Personal Interview Survey of College Economics	
Teachers, by H. R. Bowen	218

BRUS, Oglone problemy funkcionowania gospodarki socjalistycznej (General Problems of the Functioning of the Socialist Economy), by A. Korbonski	591
BUCHANAN, Fiscal Theory and Political Economy: Selected Essays, by E. C. Brown	263
— AND TULLOCK, The Calculus of Consent: Logical Foundations of Constitutional Democracy, by M. Olson, Jr.	1217
CAIRNCROSS, Factors in Economic Development, by G. Meier	1142
CAMERON, France and the Economic Development of Europe, 1800-1914: Conquests of Peace and Seeds of War, by D. S. Landes	563
CARLSON, Economic Security in the United States, by J. Skeels	1213
CHAMBERLAIN, The Firm: Micro-Economic Planning and Action, by R. J. Mat- tessich	877
CHAMBERS, Economic Fluctuations and Forecasting, by H. B. Ernst	595
CHRISTENSON, Economic Redevelopment in Bituminous Coal: The Special Case of Technological Advance in United States Coal Mines, 1930-1960, by M. S. Baratz	1191
CLARK, Competition As a Dynamic Process, by M. W. Watkins (a review article)	1070
COBELJIĆ, Politika i metodi privrednog razvoja Jugoslavije, by P. J. Meier	574
COHEN, Labor in the United States, by R. J. Ward	287
COOKE, The Role of Debt in the Economy, by M. A. Robinson	604
CORRY, Money, Savings and Investment in English Economics, 1800-1850, by D. Dillard	1156
COSTANZO, Programas de estabilización económica en América Latina, by R. R. Edminster	584
CRAMP, Opinion on Bank Rate, 1822-60, by D. Dillard	1156
DAVID, Family Composition and Consumption, by P. B. Simpson	1210
DAVIS, HUGHES AND McDUGALL, American Economic History: The Development of a National Economy, by J. W. Chisholm	583
DE NAVARRETE, La distribución del ingreso y el desarrollo económico de México, by L. Solis	250
DENISON, The Sources of Economic Growth in the United States and the Alterna- tives Before Us, by M. Abramovitz (a review article)	762
DEWHURST, COPPOCK, YATES AND ASSOCIATES, Europe's Needs and Resources, by M. Gilbert	836
DHAR AND LYDALL, The Role of Small Enterprises in Indian Economic Develop- ment, by G. Rosen	577
DONALDSON, Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity, by R. W. Mayer	628
DUCHINI, Il profitto nella teoria economica contemporanea, by A. S. Hall	546
EASTHAM, Graphical Economics, by D. A. Worcester	219
ECKSTEIN, YIN AND YIN, The National Income of Communist China, by Y. L. Wu	1145
EDWARDS AND BELL, The Theory and Measurement of Business Income, by C. A. Smith	271
EICHER, Consommation et épargne, by M. Cohen	556
EISENSTEIN, The Ideologies of Taxation, by T. J. Cauley	265
ELLIS, WITH WALLICH, EDITORS, Economic Development for Latin America, by A. Karasz	571
ERMAKOV, EDITOR, Ekonomicheskie zakony sotsializma i ikh ispol'zovanie (Eco- nomic Laws of Socialism and Their Utilization), by G. Grossman	547
FELLNER, GILBERT, HANSEN, AND OTHERS, The Problem of Rising Prices, by A. Smithies	535
FERGUSON AND KREPS, Principles of Economics, by S. N. Whitney	1125
FERGUSON, LERNER AND OTHERS, The Economic Value of the United States Mer- chant Marine, by W. Gorter	279
FISCHER, Bank Holding Companies, by G. W. Woodworth	870
FISHER, WITH KAYSER, A Study in Econometrics: The Demand for Electricity in the United States, by A. Zellner	885
FISHMAN AND FISHMAN, The American Economy, by L. Blum	1126
FLORENCE, Post-War Investment, Location and Size of Plant, by K. Kurihara ...	831

FLORES, Tratado de economía agrícola, by J. O. Bray	894
FRANK, The European Common Market—An Analysis of Commercial Policy, by P. W. Bell	614
FRIEND AND JONES, EDITORS, Proceedings of the Conference on Consumption and Saving, by R. Stone	538
FROELICH, EDITOR, Land Tenure, Industrialization, and Social Stability: Ex- periences and Prospects in Asia, by H. T. Patrick	579
FUCHS, Changes in the Location of Manufacturing in the United States Since 1929, by H. S. Konijn	879
FULLER, The Gentlemen Conspirators: The Story of the Price-Fixers in the Elec- trical Industry, by N. A. Mercer	1184
GALBRAITH, Economic Development in Perspective, by G. Meier	1142
GANGEMI, Finanza pubblica, by K. Holbik	606
GANNAGÉ, Economie du développement, by J. Sheahan	1144
GERN, L'indexation des salaires: ses répercussions économiques, by H. W. Davey .	1204
GHOSH, The Financing of Economic Development, by F. C. Child	1163
GIERSCH, Allgemeine Wirtschaftspolitik—Grundlagen, by G. Grosschmid	1124
GITLOW, Economics, by B. J. Jones	810
GOLAY, The Philippines: Public Policy and National Economic Development, by B. Dorfman	252
GOODMAN, Industrial Materials in Canadian American Relations, by D. W. Slater	625
GOODRICH, CRANMER, RUBIN AND SEGAL, Canals and American Economic Develop- ment, by H. M. Gray	842
GORDON, The Investment, Financing and Valuation of the Corporation, by D. Bodenhorn	1174
GUÉNAULT AND JACKSON, The Control of Monopoly in the United Kingdom, by G. Rosenbluth	275
HABAKKUK, American and British Technology in the Nineteenth Century: The Search for Labour-Saving Inventions, by J. Schmookler	1134
HAMILTON, The Consumer in Our Economy, by V. Wyckoff	901
HANSEN, Foreign Trade Credits and Exchange Reserves—A Contribution to the Theory of International Capital Movements, by C. P. Kindleberger	608
HARRIS, EDITOR, The Dollar in Crisis, by H. K. Zassenhaus	615
HARTLE, The Employment Forecast Survey, by R. Ferber	1205
HASAN, Deficit Financing and Capital Formation—The Pakistan Experience, 1951-1959, by F. C. Child	1163
HATANAKA, The Workability of Input-Output Analysis, by A. Gosfield	553
HAX, Vertikale Preisbindung in der Markenartikelindustrie, by R. W. Gergner	276
HEADY, BAKER AND OTHERS, EDITORS, Agricultural Supply Functions—Estimating Techniques and Interpretation, by S. Hoos	283
HEADY AND DILLON, Agricultural Production Functions, by Z. Griliches	280
HEERTJE, De prijsvorming van consumptiegoederen op oligopolistische markten, by E. Thorbecke	550
HENDERSON, The Industrial Revolution in Europe, 1815-1914, by P. David	1137
HODGKINS, Soviet Power: Energy Resources, Production and Potentials, by F. G. Adams	285
HOLLAND, Dividends under the Income Tax, by E. R. Rolph	1161
HOLMANS, United States Fiscal Policy 1945-1959: Its Contribution to Economic Stability, by P. B. Trescott	605
IULO, Electric Utilities—Costs and Performance, by R. W. Harbeson	277
JANSEN, Free Trade, Protection and Customs Union, by R. A. Mundell	621
JASNY, Soviet Industrialization, 1928-1952, by A. Erlich	846
JOHNSON, Canada in a Changing World Economy, by H. C. Eastman	1171
JONES AND GREBLER, The Secondary Mortgage Market, by H. Jones	868
JOSSA, Interesse, moneta e credito, by G. Ackley	259
KALDOR, Ensayos sobre desarrollo económico, by A. Basch	242
KATONA, LININGER, MORGAN, AND MUELLER, 1961 Survey of Consumer Finances, by P. B. Simpson	1210

KEISER, Introductory Economics, by J. H. Stauss	221
KENDRICK, Productivity Trends in the United States, by R. A. Kavesch	834
KIRKLAND, Industry Comes of Age: Business, Labor, and Public Policy 1860-1897, by J. W. Fredrickson	237
KLAMAN, The Postwar Residential Mortgage Market, by H. S. Schwartz	597
KLEIN, An Introduction to Econometrics, by E. S. Mills	1151
——, BALL, HAZLEWOOD AND VANDOME, An Econometric Model of the United Kingdom, by M. Nerlove (a review article)	154
KRAVIS, The Structure of Income—Some Quantitative Essays, by P. B. Simpson ..	1210
KRELLE, Preistheorie, by C. W. Efrogymson	1132
KREPS, Money, Banking and Monetary Policy, by H. S. Gordman	1158
KRONROD, Problemi politicheskoi ekonomii sotsializma: vypusk 1960 g (Problems of the Political Economy of Socialism: 1960 issue), by M. Dobb	862
KUZNETS, Capital in the American Economy, Its Formation and Financing, by C. L. Schultze	814
LAMPMAN, The Share of Top Wealth-Holders in National Wealth, 1922-56, by O. H. Brownlee	1150
LATOUCHE, The Birth of Western Economy: Economic Aspects of the Dark Ages, by R. de Roover	238
LESTER, The Economics of Unemployment Compensation, by H. Malisoff	899
LEVY, Analyse structurale et méthodologie économique, by N. Georgescu-Roegen ..	1123
LI, The Statistical System of Communist China, by K. C. Yeh	853
LINDER, An Essay on Trade and Transformation, by F. Gehrels	622
LUDTKE, The American Financial System: Markets and Institutions, by E. Neuberger	261
LUNDBERG, Produktivitet och räntabilitet. Studier i kapitalets betydelse inom svenskt näringsliv (Productivity and Profitability. Studies of the Role of Capital in the Swedish Economy), by G. Ohlin	827
LUTZ, The Problem of International Economic Equilibrium, by A. C. Chiang	1170
—— AND HAGUE, EDITORS, The Theory of Capital, by V. L. Smith (a review article)	481
MAASS, HUFSCHEMIDT AND OTHERS, Design of Water-Resource Systems—New Techniques for Relating Economic Objectives, Engineering Analysis, and Governmental Planning, by J. W. Milliman	1188
MACURA, Stanovništvo kao činilac privrednog razvoja Jugoslavije, by P. J. Meier ..	574
MALANOS, Intermediate Economic Theory, by R. E. Slesinger	557
MALYSHEV, Obshchestvenny uchet truda i tsena pri sotsializme (The Social Accounting of Labor and Price under Socialism), by J. M. Montias	864
MARRAMA, Ciclo economico e politica anti-ciclica, by B. Foa	544
MARSHALL, Principles of Economics, by V. W. Bladen	1127
MAXWELL, Tax Credits and Intergovernmental Fiscal Relations, by J. K. Butters ..	1159
MCCLELLAND, The Achieving Society, by G. Katona	580
MCCRACKEN, Keynesian Economics in the Stream of Economic Thought, by L. E. Dobriansky	226
MCCRONE, The Economics of Subsidizing Agriculture: A Study of British Policy, by E. O. Heady	1196
MEANS, Pricing Power and the Public Interest, by E. W. Clemens	887
MICHEL, Stratégie du marché—théorie de la firme et vente sous marque, by H. Grayson	225
MILLER, The Enterprise of a Free People: Aspects of Economic Development in New York State During the Canal Period, 1792-1838, by H. M. Gray	842
MODIGLIANI AND COHEN, The Role of Anticipations and Plans in Economic Behavior and Their Use in Economic Analysis and Forecasting, by A. M. Okun ..	1176
MOES, Local Subsidies for Industry, by A. Simmons	881
MORGAN, Labor Economics, by A. T. Helbing	896
MUNTKE, Horisontale Karteller, by F. B. Jensen	893
NEALE, The Antitrust Laws of the United States of America, by G. Rosenbluth ..	275

NEMCHINOV, EDITOR, <i>Primenenie matematiki v ekonomicheskikh issledovaniyakh</i> (Application of Mathematics in Economic Investigations), by C. Almon, Jr. . .	587
NETTELS, <i>The Emergence of a National Economy, 1775-1815. Vol. 2, The Economic History of the United States</i> , by F. G. Hill	844
NEUMARK, EDITOR, <i>Die Konzentration in der Wirtschaft</i> , by E. Grunberg	1186
NICOLAÏ, <i>Comportement économique et structures sociales</i> , by D. Vikor	533
NOVE, <i>The Soviet Economic: An Introduction</i> , by J. Taylor	849
NURKSE, <i>Equilibrium and Growth in the World Economy</i> (edited by Haberler and Stern), by B. Higgins	239
OLIVER, <i>The Control of Hire-Purchase</i> , by E. Miller	599
ONIDA, <i>Economia d' azienda</i> , by A. L. Sancetta	883
ORCUTT AND OTHERS, <i>Microanalysis of Socioeconomic Systems: A Simulation Study</i> , by T. M. Whitin	905
OZNOBINA, EDITOR, <i>Ocherki po sovremennoy sovyetskoy i zarubezhnoy ekonomike</i> , <i>Sbornik statey, Vipusk I</i> (Essays on Contemporary Soviet and Foreign Economics—A Collection of Articles, 1st issue), by A. P. Ruderman	217
PAGLIN, <i>Malthus & Lauderdale, The Anti-Ricardian Tradition</i> , by W. D. Grampp	228
PAPI, <i>Economia internazionale</i> , by N. M. Petruzzelli	619
PASCHKE, <i>Bestimmungsgründe des persönlichen Sparens—Ein Betrag zur ökonomischen Verhaltensforschung</i> , by H. Brems	549
PEACOCK AND WISEMAN, <i>The Growth of Public Expenditure in the United Kingdom</i> , by F. H. Jackson	602
PECK, <i>Competition in the Aluminum Industry: 1945-1958</i> , by D. Dewey	630
PEPELASSIS, MEARS AND ADELMAN, <i>Economic Development, Analysis and Case Studies</i> , by D. L. Spencer	256
PERROUX, <i>L'économie du XXIème siècle</i> , by B. Balassa	531
PIATIER, <i>Statistique et observation économique</i> , by G. Tintner	586
REBOUD, <i>Systèmes fiscaux et Marché Commun</i> , by K. W. Roskamp	626
REES, <i>The Economics of Trade Unions</i> , by A. M. Cartter	1208
RICHMOND, <i>Regulation and Competition in Air Transportation</i> , by A. J. Gellman	635
ROBERTS, <i>Trade Unions in a Free Society</i> , by E. C. Brown	897
ROLPH AND BREAK, <i>Public Finance</i> , by C. A. Hall, Jr.	267
ROTHENBERG, <i>The Measurement of Social Welfare</i> , by P. Streeten	823
SCHWARTZ, <i>Lectures on the Mathematical Method in Analytical Economics; Vol. I, Mathematics and Its Applications</i> , by D. V. T. Bear	1129
SENGUPTA AND SEN, <i>India's Economic Growth Processes, Problems and Policies</i> , by D. L. Spencer	857
SHACKLE, <i>Decision Order and Time in Human Affairs</i> , by S. Schoeffler	822
SHISTER, AARON AND SUMMERS, EDITORS, <i>Public Policy and Collective Bargaining</i> , by F. Witney	1202
SLICHTER, <i>Economic Growth in the United States: Its History, Problems, and Prospects</i> , by M. Bronfenbrenner	568
SMITH, <i>The Economics of Socialism Reconsidered</i> , by B. P. Beckwith	861
SMITH, <i>Investment and Production: A Study in the Theory of the Capital-Using Enterprise</i> , by J. Hirshleifer	540
SOBOL', <i>Ocherki po voprosam balansa narodnogo khoziaistva</i> (Essays on Problems Concerning the Balance of the National Economy), by J. M. Montias	864
SOBOLEV, <i>Khozraschet v kollektivakh</i> (Economic Accounting in Collective Farms), by J. F. Karcz	1193
SOULE, <i>Economics, Measurement, Theories, Case Studies</i> , by K. W. Roskamp	222
SPENCER, CLARK AND HOGUET, <i>Business and Economic Forecasting</i> , by J. W. Hooper	594
SPENGLER, EDITOR, <i>Natural Resources and Economic Growth</i> , by S. G. Winter, Jr.	639
SPULBER, <i>The Soviet Economy: Structure, Principles, Problems</i> , by M. Bornstein	1147
STANBACK, <i>Postwar Cycles in Manufacturers' Inventories</i> , by R. Robinson	1154
STARK, <i>Social and Economic Frontiers in Latin America</i> , by G. Wythe	250
STOCKING, <i>Workable Competition and Antitrust Policy</i> , by P. O. Steiner	273
STOJANOVIC, <i>Teorija privrednog razvoja u socializmu</i> (The Theory of Economic Development under Socialism), by E. Ames	245

STREETEN, Economic Integration: Aspects and Problems, by I. S. Friedman . . .	610
THORE, Household Saving and the Price Level, by E. W. Gilboy	829
VAINSHTEIN, Narodnoie bogatstvo i narodnokhoziaistvennoie nakoplenie predrev- olutsionnoi Rossii (National Wealth and Accumulation in Prerevolutionary Russia), by S. Kuznets	235
VANEK, International Trade: Theory and Economic Policy, by K. J. Rothwell . .	871
VILLARD, Economic Performance—An Introduction to Economics, by K. D. Roose	809
VINSKI, Procjena nacionalnog bogatstva po područjima Jugoslavije (Estimate of National Wealth of Yugoslavia by Areas), by J. Tomasevich	589
WAGENLEHNER, Das sowjetische Wirtschaftssystem und Karl Marx, by V. Holubnychy	257
WAGLE, Technique of Planning for Accelerated Economic Growth of Underde- veloped Countries, by R. Gibson	244
WASSERMAN AND HULTMAN, Modern International Economics—A Balance of Pay- ments Approach, by S. E. Braden	1173
WEBER, Schein und Wirklichkeit in der Volkswirtschaft, by H. Apel	812
WEBER, EDITOR, The Structure of Collective Bargaining, by J. E. Maher	641
WEISS, Economics and American Industry, by R. F. Lanzillotti	233
WENDT, Housing Policy—The Search for Solutions: A Comparison of the United Kingdom, Sweden, West Germany, and the United States Since World War II, by W. C. Freund	1198
WILCOX, WEATHERFORD AND HUNTER, Economies of the World Today—Their Organization, Development, and Performance, by L. F. Manly	1148
WITTE, The Development of the Social Security Act, by J. Skeels	1213
WONNACOTT, P., The Canadian Dollar, 1948-1958, by R. E. Caves	873
WONNACOTT, R. J., Canadian-American Dependence: An Interindustry Analysis of Production and Prices, by R. E. Caves	873
WUNDERLICH, Farm Labor in Germany 1810-1945, by A. Sturmthal	286
YAMADA, Theory and Application of Interindustry Analysis, by G. Ranis	542
ZIELINSKI, Rachunek ekonomiczny w socjalizmie (Economic Calculation under Socialism), by L. Smolinski	1153
Cartel and Monopoly in Modern Law, by R. C. Bernhard	631
Economic and Social Consequences of Disarmament, by A. L. Gray, Jr.	906
Economic Impacts of Disarmament, by A. L. Gray, Jr.	906
Employment Objectives in Economic Development—Report of a Meeting of Experts, by S. A. Levitan	1200
Formulating Industrial Development Programmes—with Special Reference to Asia and the Far East, by A. A. Rozental	858
Gegenwartsprobleme des öffentlichen Haushalts; Schriftenreihe der Hochschule Speyer, Vol. 12, by G. Colm	1166
International Payments Imbalances and Need for Strengthening International Financial Arrangements. (Hearings before and Report of the Subcommittee on International Exchange and Payments of the Joint Economic Committee), by E. Zupnick	876
Méthodes de prévision du développement économique à long terme, by S. Spiegel- glas	850
Money and Credit: Their Influence on Jobs, Prices, and Growth (The Report of the CED Commission on Money and Credit), by L. Tarshis (a review article) . .	472
National Transportation Policy; Report of the Special Study Group on Trans- portation Policies in the United States, by L. Warner	891
Output, Input and Productivity Measurement, National Bureau of Economic Research, Studies in Income and Wealth, Vol. 25, by S. Melman	223
Le plan septennal soviétique: études et documents, by V. Holubnychy	255
The Rate and Direction of Inventive Activity: Economic and Social Factors, by W. P. Strassmann	1139
Saving in India, by A. Basch	248
Wagakuni chingin-kōzō no shiteki kōsatsu (A Historical Study of Japanese Wage Structure), by K. Taira	643

PAPERS AND PROCEEDINGS

(In May 1962 Number)

BUSINESS BEHAVIOR, STUDIES IN

Investment Plans and Realizations	R. EISNER	190
Location Decisions of Manufacturers	E. MUELLER AND J. N. MORGAN	204
The Predictive Value of Surveys of Business In- tentions	A. M. OKUN	218
<i>Discussion</i> by D. H. BRILL		226

BUSINESS CYCLES, INTERNATIONAL TRANSMISSION OF: PROBLEMS AND POLICIES

The Postwar Business Cycle in Western Europe ..	M. Gilbert	93
Economic Instability in an International Setting ..	J. J. POLAK AND R. R. RHOMBERG	110
<i>Discussion</i> by W. S. SALANT, R. E. CAVES, E. DESPRES		119

CONSUMER SOVEREIGNTY, REAPPRAISAL OF THE DOCTRINE OF

The Costs of Automobile Model Changes Since 1949	F. M. FISHER, Z. GRILICHES, AND C. KAYSEN	259
On the Principle of Consumers' Sovereignty	T. SCITOVSKY	262
Consumers' Sovereignty Revisited, and the Hos- pitality of Freedom of Choice	J. ROTHENBERG	269
<i>Discussion</i> by A. BERGSON, S. WELLISZ, W. J. BAUMOL		284

ECONOMIC DEVELOPMENT, PROBLEMS OF

The Role of the Price Structure in Economic De- velopment	K. E. BOULDING AND P. SINGH	28
Laborsaving in Economic Growth	J. H. POWER	39
The Development of Entrepreneurship	G. F. PAPANEK	46
<i>Discussion</i> by E. E. HAGEN, A. M. KAMARCK, F. C. SHORTER		59

ECONOMISTS, THE MARKET FOR

The Supply of Economists	E. CLAGUE AND M. LEVINE ...	497
The Demand for Economists	F. M. BODDY	503
The Functioning of the Market for Economists ..	G. G. SOMERS	509
<i>Discussion</i> by S. E. HARRIS, H. D. MARSHALL, G. C. SMITH		519

FAMILIES, ECONOMIC BEHAVIOR OF

Microanalytic Models of the United States Econ- omy: Need and Development	G. H. ORCUTT	229
Toward a Microanalytic Model of the Household Sector	A. S. GOLDBERGER AND M. L. LEE	241
<i>Discussion</i> by R. SUMMERS, D. B. SUITS, M. E. DINGLE		252

INVITED LECTURE

New Developments in the Theory of the Firm ...	H. A. SIMON	1
<i>Discussion</i> by W. A. WALLIS, P. F. LAZARSFELD, J. LINTNER		16

THE LAGGING U.S. GROWTH RATE

How to Raise the High-Employment Growth Rate by One Percentage Point	E. F. DENISON	67
---	---------------------	----

Technical Progress, Capital Formation, and Economic Growth	R. M. SOLOW	76
Discussion by G. COLM, J. CORNWALL, A. SMITHIES		87
THE REPORT OF THE COMMISSION ON MONEY AND CREDIT		
An Essay in <i>Petitio Principii</i>	M. FRIEDMAN	291
The Report of the Commission on Money and Credit	W. L. SMITH	302
Report of the Commission on Money and Credit: A Commentary	R. A. YOUNG	311
Discussion by R. ROBINSON, R. LINDSAY		320
RESEARCH AND DEVELOPMENT, THE ECONOMICS OF		
Determinants of Inventive Activity	J. SCHMOOKLER AND O. BROWNLEE	165
Research and Development, New Products, and Productivity Change	W. E. GUSTAFSON	177
Discussion by Z. GRILICHES, J. W. MCKIE		186
SOVIET ECONOMIC PLANNING		
Input-Output Analysis and Soviet Planning	H. S. LEVINE	127
The Scale of Soviet Industrial Establishments	L. SMOLINSKI	138
On Patterns of Technological Choice in Soviet Industry	D. GRANICK	149
Discussion by L. G. REYNOLDS, J. BLACKMAN, A. ERLICH		158
TAX PROBLEMS		
Income, Consumption, and Property as Bases of Taxation	R. GOODE	327
Tax Incentives for Investment	E. C. BROWN	335
The Sensitivity of the Yield of Personal Income Tax in the United Kingdom	A. R. PREST	346
Discussion by G. F. BREAK, O. ECKSTEIN, M. I. WHITE		349
THE TEACHING OF ECONOMICS		
The Content of the Introductory Course	B. F. HALEY	474
Relation of the Undergraduate Major to Graduate Economics	R. RUGGLES	483
Discussion by R. BRANDIS, K. D. ROOSE, C. M. STEVENS		490
TRANSPORTATION IN ECONOMIC DEVELOPMENT, THE ROLE OF		
Air Transport and Economic Development: Some Comments on Foreign Aid Programs	H. HEYMANN, JR.	386
Planning for Transport Investment in the Development of Iran	H. J. KAUFMANN	396
Transportation and Technology	W. OWEN	405
Discussion by J. R. NELSON		414
TRANSPORTATION PROBLEMS IN THE AMERICAN ECONOMY		
Federal Transport Regulatory Policy	M. P. ARTH	416
The Pricing of Highway, Waterway, and Airway Facilities	J. C. NELSON	426
The Merger Movement in Transportation	K. T. HEALY	436
Discussion by M. J. ROBERTS, D. F. PEGRUM		445
URBAN REGIONS, SYSTEMS OF ECONOMIC ACCOUNTS AND ANALYSIS FOR		
A National System of Metropolitan Information and Analysis	H. S. PERLOFF	356

Design and Use of Regional Accounts	W. Z. HIRSCH	365
Organization for Data Collection, Analysis, and Reporting	H. COHEN	374
<i>Discussion</i> by M. B. GIVENS, F. T. MOORE		381
WATER RESOURCE USE, ECONOMICS OF		
The Political Economy of Water Development ...	V. OSTROM	450
Extensions of Benefit-Cost Analysis	G. S. TOLLEY AND C. HARRELL	459
<i>Discussion</i> by S. A. MARGLIN, J. W. MILLIMAN		469

CONTRIBUTORS:

Leading articles are marked (a); communications (c); papers read at the annual meeting, published in the Papers and Proceedings, separately paged, are marked (p); review articles (r); and all others are book reviews.

- | | |
|---------------------------------|---------------------------|
| Abbott, L. 1104 (c) | Chiu, J. S. Y. 753 (a) |
| Abramovitz, M. 762 (r) | Clague, E. 497 (p) |
| Ackley, G. 259 | Clemens, E. W. 887 |
| Adams, F. G. 285 | Cohen, H. 374 (p) |
| Adams, W. 1179 | Cohen, M. 556 |
| Alhadeff, D. A. 194 (c) | Colm, G. 87 (p), 1166 |
| Aliber, R. Z. 1112 (c) | Cornwall, J. 89 (p) |
| Almon, C., Jr. 587 | Davey, H. W. 1204 |
| Ames, E. 245 | David, P. 1137 |
| Anderson, E. A. 246 | Davidson, P. 738 (a) |
| Apel, H. 812 | DeForest, J. D. 1167 |
| Arth, M. P. 416 (p) | Denison, E. F. 67 (p) |
| Averch, H. 1052 (a) | de Roover, R. 238 |
| Balassa, B. 531 | Despres, E. 124 (p) |
| Baratz, M. S. 1191 | Dewey, D. 630 |
| Basch, A. 242, 248 | Dillard, D. 1156 |
| Baumol, W. J. 288 (p), 1078 (c) | Dingle, M. E. 256 (p) |
| Bear, D. V. T. 1129 | Dobb, M. 862 |
| Beckwith, B. P. 861 | Dobriansky, L. E. 226 |
| Bell, P. W. 614 | Dorfman, B. 252 |
| Benishay, H. 209 (c) | Eastman, H. C. 1171 |
| Bergner, R. W. 276 | Eckstein, O. 351 (p) |
| Bergson, A. 284 (p) | Edminster, R. R. 584 |
| Bernhard, R. C. 631 | Efroymsen, C. W. 1132 |
| Beza, S. T. 1117 (c) | Eisner, R. 190 (p) |
| Blackman, J., Jr. 159 (p) | Elbing, A. O. 753 (a) |
| Bladen, V. W. 1127 | Erllich, A. 162 (p), 846 |
| Bloomfield, A. I. 269 | Ernst, H. B. 595 |
| Blum, L. 1126 | Ferber, R. 19 (a), 1205 |
| Boddy, F. M. 503 (p) | Fisher, F. M. 259 (p) |
| Bodenhorn, D. 1174 | Foa, B. 544 |
| Bornstein, M. 64 (a), 1147 | Frankel, M. 995 (a) |
| Boulding, K. E. 28 (p) | Fredrickson, J. W. 237 |
| Bowen, H. R. 218 | Freund, W. C. 1198 |
| Braden, S. E. 1173 | Friedman, I. S. 610 |
| Brandis, R. 490 (p) | Friedman, M. 291 (p) |
| Bray, J. O. 894 | Gehman, C. 513 (c) |
| Break, G. F. 349 (p) | Gehrels, F. 622 |
| Brems, H. 549 | Gellman, A. J. 635 |
| Brill, D. H. 226 (p) | Georgescu-Roegen, N. 1123 |
| Bronfenbrenner, M. 568 | Gibson, R. 244 |
| Brown, E. C. 335 (p), 263, 897 | Gilbert, M. 93 (p), 836 |
| Brownlee, O. 165 (p), 1150 | Gilboy, E. W. 829 |
| Butters, J. K. 1159 | Givens, M. B. 381 (p) |
| Campbell, R. W. 703 (a) | Goldberger, A. S. 241 (p) |
| Cartter, A. M. 1208 | Goode, R. 327 (p) |
| Cauley, T. J. 265 | Gordman, H. S. 1158 |
| Caves, R. E. 122 (p), 873 | Gordon, M. J. 203 (c) |
| Chiang, A. C. 1170 | Gorter, W. 279 |
| Child, F. C. 1163 | Gosfield, A. 553 |
| Chisholm, J. W. 583 | Grampp, W. D. 228 |

- Granick, D. 149 (p)
 Gray, A. L., Jr. 906
 Gray, D. H. 230
 Gray, H. M. 842
 Grayson, H. 225
 Griliches, Z. 186 (p), 259 (p), 280
 Grosschmid, G. 1124
 Grossman, G. 547
 Grunberg, E. 1186
 Gustafson, W. E. 177 (p)
 Hagen, E. E. 59 (p)
 Haley, B. F. 474 (p)
 Hall, A. S. 546
 Hall, C. A., Jr. 267
 Harbeson, R. W. 277
 Harrell, C. 459 (p)
 Harris, S. E. 519 (p)
 Harsanyi, J. C. 903
 Heady, E. O. 1196
 Healy, K. T. 436 (p)
 Helbing, A. T. 896
 Heymann, H., Jr. 386 (p)
 Higgins, B. 239
 Hill, F. G. 844
 Hirsch, W. Z. 365 (p)
 Hirshleifer, J. 540
 Hochwald, W. 232
 Holbik, K. 606
 Holland, E. P. 408 (a)
 Holubnychy, V. 255, 257
 Hood, W. C. 841
 Hooper, J. W. 594
 Hoos, S. 283
 Houssiaux, J. R. 638
 Ingram, J. C. 612
 Jackson, F. H. 602
 Jensen, F. B. 893
 Johnson, H. G. 335 (a)
 Johnson, L. L. 1052 (a)
 Jones, H. 868
 Kamarck, A. M. 61 (p)
 Karasz, A. 571
 Karcz, J. F. 1193
 Katona, G. 580
 Kaufmann, J. H. 396 (p)
 Kavesh, R. A. 834
 Kaysen, C. 259 (p)
 Kemp, M. C. 492 (c)
 Keyes, L. S. 528 (c)
 Kindleberger, C. P. 608
 Kirkpatrick, F. H. 645
 Konijn, H. S. 879
 Korbonski, A. 591
 Kurihara, K. 831
 Kuznets, S. 235
 Ladd, W. M. 801 (c)
 Landes, D. S. 563
 Lanzillotti, R. F. 233
 Lazarsfeld, P. F. 18 (p)
 Lee, M. L. 241 (p)
 Lerner, A. P. 783 (c)
 Levine, H. S. 127 (p)
 Levine, M. 497 (p)
 Levitan, S. A. 1200
 Lindsay, R. 324 (p)
 Lintner, J. 23 (p)
 Maher, J. E. 641
 Malisoff, H. 899
 Manly, L. F. 1148
 Mansfield, E. 1023 (a)
 Marglin, S. A. 469 (p)
 Marshall, H. D. 521 (p)
 Martin, D. D. 522 (c)
 Mattessich, R. V. 877
 Mayer, R. W. 628
 McGuire, J. W. 753 (a)
 McKie, J. W. 188 (p)
 McKinley, E. 832
 Meier, G. 1142
 Meier, P. J. 574
 Mellon, W. G. 1120 (c)
 Melman, S. 223
 Mercer, N. A. 1184
 Michaely, M. 685 (a)
 Miller, E. 599
 Miller, H. L., Jr. 1118 (c), 1178
 Milliman, J. W. 470 (p), 1188
 Mills, E. S. 1151
 Montias, J. M. 864
 Moore, F. T. 383 (p)
 Morag, A. 177 (c)
 Morgan, J. N. 204 (p)
 Mueller, E. 204
 Mundell, R. A. 621
 Nelson, J. C. 426 (p)
 Nelson, J. R. 414 (p)
 Nerlove, M. 154 (r)
 Neuberger, E. 261
 Nove, A. 559
 O'Connor, J. 460 (a)
 Ohlin, G. 827
 Okun, A. M. 218 (p), 1176
 Olson, M., Jr. 1217
 Orcutt, G. H. 229 (p)
 Orr, D. 1120
 Ostrom, V. 450 (p)
 Owen, W. 405 (p)
 Papanek, G. F. 46 (p)
 Patrick, H. T. 579
 Patterson, G. 1117 (c)
 Pearce, I. F. 1088 (c)
 Pegrum, D. F. 447 (p)
 Perlo, V. 496 (c)
 Perloff, H. S. 356 (p)
 Petruzzelli, N. M. 619
 Phelps, E. 1097 (c)
 Polak, J. J. 110 (p)
 Power, J. H. 39 (p)

- Prest, A. R. 346 (p)
 Ranis, G. 542
 Reid, M. G. 728 (a)
 Reynolds, L. G. 158 (p)
 Rhomberg, R. R. 110 (p)
 Roberts, M. J. 445 (p)
 Robinson, M. A. 604
 Robinson, R. 320 (p), 1154
 Rolph, E. R. 1161
 Roose, K. D. 492 (p), 809
 Rosen, G. 577
 Rosenbluth, G. 275
 Roskamp, K. W. 222, 626
 Rothenberg, J. 269 (p)
 Rothwell, K. J. 871
 Rozen, M. E. 185 (c)
 Rozental, A. A. 858
 Ruderman, A. P. 217
 Ruggles, R. 483 (p)
 Salant, W. S. 119 (p)
 Salera, V. 601
 Samuelson, P. A. 1 (a)
 Sancetta, A. L. 883
 Schmookler, J. 165 (p), 1134
 Schoeffler, S. 822
 Schultze, C. L. 814
 Schwartz, H. S. 597
 Scitovsky, T. 262 (p)
 Shaw, F. 1215
 Sheahan, J. 1144
 Shorter, F. C. 64 (p), 851
 Shoup, C. 1165
 Simmons, A. 881
 Simon, H. A. 1 (p)
 Simpson, P. B. 1210
 Singh, P. 28 (p)
 Skeels, J. 1213
 Slater, D. W. 625
 Slesinger, R. E. 557
 Smith, C. A. 271
 Smith, G. D. 523 (p)
 Smith, V. L. 481 (r)
 Smith, W. L. 302 (p)
 Smithies, A. 91 (p), 535
 Smolinski, L. 138 (p), 1153
 Solis, L. 250
 Solow, R. M. 76 (p)
 Somers, G. G. 509 (p)
 Sosnovy, T. 253
 Spencer, D. L. 256, 857
 Spiegelglas, S. 850
 Staller, G. J. 385 (a)
 Stauss, J. H. 221
 Steiner, P. O. 273
 Stelzer, I. M. 889
 Stevens, C. M. 494 (p)
 Stone, R. 538
 Strassmann, W. P. 1139
 Streeten, P. 823
 Sturmthal, A. 286
 Suits, D. B. 104 (a), 254 (p)
 Summers, R. 252 (p)
 Szabo, M. L. 859
 Taira, K. 643
 Tarn, A. 703 (a)
 Tarshis, L. 472 (r), 1110 (c)
 Taylor, J. 849
 Thorbecke, E. 550
 Tintner, G. 586
 Tolley, G. S. 459 (p)
 Tomasevich, J. 589
 Trescott, P. B. 605
 Uzawa, H. 797 (c)
 Vikor, D. 533
 Villard, H. H. 530
 Wallis, W. A. 16 (p)
 Ward, R. J. 287
 Warner, L. 891
 Watkins, M. W. 1070 (r)
 Weckstein, R. S. 133 (a)
 Wellisz, S. 286 (p)
 White, M. I. 353 (p)
 Whitin, T. M. 905
 Whitney, S. N. 1125
 Williamson, O. E. 1099 (c)
 Winter, S. G., Jr. 639
 Witney, F. 1202
 Woodworth, G. W. 870
 Worcester, D. A. 219
 Working, H. 431 (a)
 Wu, Y. L. 1145
 Wyckoff, V. 901
 Wythe, G. 250
 Yeh, K. C. 853
 Young, R. A. 311 (p)
 Zassenhaus, H. K. 615
 Zellner, A. 885
 Zupnick, E. 876

THE AMERICAN ECONOMIC REVIEW

BERNARD F. HALEY, Managing Editor

DORIS MERRIAM, Assistant

BOARD OF EDITORS

Martin Bronfenbrenner
Albert O. Hirschman
Alfred E. Kahn
Roland N. McKean

Joseph A. Pechman
Melvin W. Reder
Tibor Scitovsky
Robert Solow

VOLUME LII

MARCH 1962

Number 1

ARTICLES

Economists and the History of Ideas	<i>P. A. Samuelson</i>	1
Research on Household Behavior	<i>Robert Ferber</i>	19
The Soviet Price System	<i>Morris Bornstein</i>	64
Forecasting and Analysis with an Econometric Model	<i>D. B. Suits</i>	104
Welfare Criteria and Changing Tastes	<i>R. S. Weckstein</i>	133
A Quarterly Econometric Model for the United Kingdom (Review Article)	<i>Marc Nerlove</i>	154

COMMUNICATIONS

For an Inflation-Proof Economy	<i>Amotz Morag</i>	177
Credit Controls and Financial Intermediaries: Comment	<i>M. E. Rozen</i>	185
Reply	<i>D. A. Alhadeff</i>	194
Variability in Earnings-Price Ratios: Comment	<i>M. J. Gordon</i>	203
Reply	<i>Haskel Benishay</i>	209

BOOK REVIEWS

AGANBEGUAN, ARTAMONOV, IOFFE AND SHEYNIN, SSSR-S.Sh.A. (Tsifry i fakty) (USSR-U.S. Figures and Facts), by T. Sosnovy	253
AUBREY, Coexistence: Economic Challenge and Response, by A. I. Bloomfield	269
BODENHORN, Intermediate Price Theory, by D. H. Gray	230
BRANDT, Preistheorie, by W. Hochwald	232
BREWIS, ENGLISH, SCOTT AND JEWITT, Canadian Economic Policy, by E. A. Ander- son	246

Manuscripts and editorial correspondence relating to the regular quarterly issues of this REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California. *Style Instructions* for guidance in preparing manuscripts in acceptable form will be provided upon request to the editor.

No responsibility for the views expressed by authors in this REVIEW is assumed by the editors or the publisher, The American Economic Association.

Copyright American Economic Association 1962

BRUNSWICK AND SHEATSLEY, A Personal Interview Survey of College Economics Teachers, by H. R. Bowen	218
BUCHANAN, Fiscal Theory and Political Economy: Selected Essays, by E. C. Brown	263
COHEN, Labor in the United States, by R. J. Ward	287
DE NAVARRETE, La distribución del ingreso y el desarrollo económico de México, by L. Solis	250
EASTHAM, Graphical Economics, by D. A. Worcester	219
EDWARDS AND BELL, The Theory and Measurement of Business Income, by C. A. Smith	271
EISENSTEIN, The Ideologies of Taxation, by T. J. Cauley	265
FERGUSON, LERNER AND OTHERS, The Economic Value of the United States Merchant Marine, by W. Gorter	279
GOLAY, The Philippines: Public Policy and National Economic Development, by B. Dorfman	252
GUÉNAULT AND JACKSON, The Control of Monopoly in the United Kingdom, by G. Rosenbluth	275
HAX, Vertikale Preisbindung in der Markenartikelindustrie, by R. W. Bergner	276
HEADY, BAKER AND OTHERS, editors, Agricultural Supply Functions—Estimating Techniques and Interpretation, by S. Hoos	283
HEADY AND DILLON, Agricultural Production Functions, by Z. Griliches	280
HODGKINS, Soviet Power: Energy Resources, Production and Potentials, by F. G. Adams	285
IULO, Electric Utilities—Costs and Performance, by R. W. Harbeson	277
JOSSA, Interesse, moneta e credito, by G. Ackley	259
KALDOR, Ensayos sobre desarrollo económico, by A. Basch	242
KEISER, Introductory Economics, by J. H. Stauss	221
KIRKLAND, Industry Comes of Age: Business, Labor, and Public Policy 1860-1897, by J. W. Fredrickson	237
KLEIN, BALL, HAZLEWOOD AND VANDOME, An Econometric Model of the United Kingdom, by M. Nerlove (review article)	154
LATOUCHE, The Birth of Western Economy: Economic Aspects of the Dark Ages, by R. de Roover	238
LUDTKE, The American Financial System: Markets and Institutions, by E. Neuberger	261
MCCRACKEN, Keynesian Economics in the Stream of Economic Thought, by L. E. Dobriansky	226
MICHEL, Stratégie du marché—théorie de la firme et vente sous marque, by H. Grayson	225
NEALE, The Antitrust Laws of the United States of America, by G. Rosenbluth	275
NURKSE, Equilibrium and Growth in the World Economy (edited by Haberler and Stern), by B. Higgins	239
OZNOBINA, editor, Ocherki po sovremennoy sovyetskoy i zarubezhnoy ekonomike, Sbornik statey, Vipusk I (Essays on Contemporary Soviet and Foreign Economics—A Collection of Articles, 1st issue), by A. P. Ruderman	217
PAGLIN, Malthus & Lauderdale, the Anti-Ricardian Tradition, by W. D. Grampp ..	228
PEPELASSIS, MEARS AND ADELMAN, Economic Development, Analysis and Case Studies, by D. L. Spencer	256
ROLPH AND BREAK, Public Finance, by C. A. Hall	267
SOULE, Economics, Measurement, Theories, Case Studies, by K. W. Roskamp	222
STARK, Social and Economic Frontiers in Latin America, by G. Wythe	250
STOCKING, Workable Competition and Antitrust Policy, by P. O. Steiner	273
STOJANOVIC, Teorija privrednog razvoja u socializmu (The Theory of Economic Development under Socialism), by E. Ames	245

VAINSHTEIN, Narodnoie bogatstvo i narodnokhoziaistvennoie nakoplenie predrevolutsionnoi Rossii (National Wealth and Accumulation in Prerevolutionary Russia), by S. Kuznets	235
WAGENLEHNER, Das sowjetische Wirtschaftssystem und Karl Marx, by V. Holubnychy	257
WAGLE, Technique of Planning for Accelerated Economic Growth of Underdeveloped Countries, by R. Gibson	244
WEISS, Economics and American Industry, by R. F. Lanzillotti	233
WUNDERLICH, Farm Labor in Germany 1810-1945, by A. Sturmthal	286
Le plan septennal soviétique: études et documents, by V. Holubnychy	255
Output, Input and Productivity Measurement, National Bureau of Economic Research, Studies in Income and Wealth, Volume 25, by S. Melman	223
Saving in India, by A. Basch	248

OTHER DEPARTMENTS

Titles of New Books	290
Periodicals	308
Notes	323

Number 63 of a series of photographs of past presidents of the Association.



Paul A Samuelson

The American Economic Review

VOLUME LII

MARCH 1962

NUMBER ONE

ECONOMISTS AND THE HISTORY OF IDEAS*

By PAUL A. SAMUELSON

"For there are, in the present times, two opinions: not, as in former ages the true and the false; but the outside and the inside."

J. M. Keynes (1921)

"The proper study of Mankind is man." So said the infallible poet. And past experience at these annual gatherings of the sons and daughters of Adam Smith suggests that the popular subject of discussion among economists is not so much economics as economists. Usually the annual presidential address is an exception—an exception that does not always improve upon the rule.

According to our annals, an expiring president of this occult body begins with two choices. He may, on the one hand, give an address that summarizes his lifework or his basic contribution to some important field of scholarship. Thus, my old teacher, Paul H. Douglas, just as he was about to come out of his academic cocoon and emerge as a senatorial butterfly, gave his 1947 address on the Laws of Production, summarizing his decades of work measuring statistical production functions.

I am afraid this choice is not open to me. My own scholarship has covered a great variety of fields. And many of them involve questions like welfare economics and factor-price equalization; turnpike theorems and osculating envelopes; nonsubstitutability relations in Minkowski-Ricardo-Leontief-Metzler matrices of Mosak-Hicks type; or balanced-budget multipliers under conditions of balanced uncertainty in locally impacted topological spaces and molar equivalences. My friends warn me that such topics are suitable merely for captive audiences in search of a degree—and even then not after dark.

This leaves me still with several possible choices. For one thing, I can always talk about methodology. But although my children think of me as a remnant of "the olden days," to myself I seem just re-

* Presidential address delivered at the Seventy-Fourth Annual Meeting of the American Economic Association, New York, December 27, 1961.

cently to have become emeritus from the category of *enfant terrible*; and the only thing more terrible than the sight of an immature youth is the sight of a half-baked elder statesman. So, that part of methodology which consists of passing on good advice concerning the scholarly pitfalls to avoid and the proper paths to climb, I had better avoid.

But there is another possibility: I could give a sermon tonight on the use and misuse of mathematics in economics. This subject is the only commodity in the world that seems not subject to Gossen's law of diminishing marginal utility. It was only yesterday that three successive presidential addresses touched upon this delicious topic; and the strongest of those attacks on mathematics led to so resonant a response with this annual audience as to give rise to a standing ovation for the speaker.

Thomas Hardy remarked, "If the Archbishop of Canterbury says that God exists, that is all in the day's business; but if he says God does not exist, there you have something really significant." What a Daniel-come-to-Judgment I would be, if I, the lamb that strayed fustus' and mustus' from the fold, were to testify before God and this company that mathematics had all been a horrible mistake; that right along, it has all been there in Marshall, Books III and V; and that the most one needs for life as an economist is a strong voice, and a compass and ruler.

I wish I could be obliging. Yet even if my lips could be brought to utter the comforting words, like Galileo I would hear myself whispering inside, "But mathematics does indeed help."

I am left then finally with one choice. This evening I shall talk less about technical economics than about economists. Where do we members "of the most agreeable of the moral sciences" fit in the great stream of ideas and ideologies? On this solemn occasion I shall eschew gossip, leaving that to the corridors and lobbies. But I shall unavoidably have to deal with personalities and names if I am to explore the interrelations between professional economic thought and the general history of ideas.

I. *Within the Looking Glass*

As my old teacher Schumpeter used to say, "We are all girls here together." Hence, mine can be the view of an insider looking in, and an insider looking out.

I begin with two books. One is a work of scholarship; the other is, and you will excuse the distinction, merely a textbook. Compare *The History of Economic Analysis* by Joseph Schumpeter with *The History of Economic Doctrines* of Gide and Rist, which students used to study in my day when preparing for general examinations. I dare say that

all the names mentioned by the latter authors can be found in Schumpeter's index. But how different is the emphasis: reading Gide and Rist you would be forgiven for thinking that Robert Owen was almost as important as Robert Malthus; that Fourier and Saint-Simon were much more important than Walras and Pareto. The A. Young in their index is, of course, Arthur Young, not Allyn Young.

Now turn to Schumpeter. Everything is there; no name left out. But now it is Marshall, Walras, Wicksell and such people who steal the stage. Of course Adam Smith is given his due. But what a due! He is rather patronizingly dismissed as a synthesizer who happened to write the right book at the right time: his analytic contributions are certainly minimized.

How can we account for these differences? By the fact that Schumpeter is writing some 40 years after Gide and Rist? Only in the smallest part, I think. By 1913 Wicksell, Wicksteed, and Wieser had done their great work, but only Wieser gets a mention from Gide and Rist—one mention. The treatment of Walras is even more indicative. Walras is indeed mentioned by them; but yet not primarily for his work as a theorist so much as for his views on nationalization of land, free trade, and the State—views which Pareto and Schumpeter thought of as simply silly, like Irving Fisher's food fads and teetotalism. To verify that I am not having sport by picking on a particular set of authors, turn from Gide and Rist to Alexander Gray's brief book, the busy student's friend, to see how Walras fares there. In Gray, Leon Walras is "crowded out" by his father Auguste and is referred to as the "younger Walras," which is a little like referring to Maynard Keynes as the "younger Keynes."

No one can really deny that we have two different sets of standards here. When I began graduate study at Harvard in 1935, Schumpeter rather shocked me by saying in a lecture that of the four greatest economists in the world, three were French. (I had thought the non-Frenchman was English, probably Adam Smith; but after looking into Schumpeter's later book for the purpose of checking, I think my inference must have been incorrect and that he then meant Alfred Marshall rather than Smith.) And who were the Frenchmen?

Of course, one was Leon Walras, whom Schumpeter had no hesitation in calling the greatest economist of all time, by virtue of his first formulation of general equilibrium. Today there can be little doubt that most of the literary and mathematical economic theory appearing in our professional journals is more an offspring of Walras than of anyone else (and I stress the adjective *literary*). The comparison that Lagrange made of Newton is worth repeating in this connection: Assuredly Newton was the greatest man of science, but also the luckiest.

For there is but one system of the world and Newton was the one who found it. Similarly, there is but one grand concept of general equilibrium and it was Walras who had the insight (and luck) to find it.

I ought to add that this rating by Schumpeter deserves more credit, coming in 1935, than it would coming today. For it had predictive value as to what was to happen to our professional writings. Back in 1935, Marshall was still propped up on his throne and in large parts of the world even the zealots of the mathematical method tended to look upon Walras merely as the predecessor of the great Pareto. The bourse for professional reputations shows changing price fluctuations: if at one time Alfred Marshall was overpraised and quoted at an inflated price which left little of consumer's surplus to the buyer, he had to pay for this by later being sold at an overdiscount—as will become evident.

Since I ought not to leave you waiting for the other shoes to drop, I hasten to name the other Frenchmen. One is Cournot, a choice that will not seem too surprising. Certainly there is a professional competence about the 1838 Cournot, in the field of partial equilibrium, monopoly and oligopoly, that the modern literature only reattained by 1930. (Think only of the *rediscovery* in *this* century of the concept of marginal revenue!) I do not know that the name of Schumpeter's final giant will seem so obvious a choice. It is François Quesnay, who is deemed to be great on account of his cryptic *Tableau* and anticipation of the circular flow of economic life. Back in the days before Leontief and the resurrection of Karl Marx's Volume 2 model of circular reproduction, I thought this last choice even more far-fetched than I do today.

II. *The Pecking-Order of Analysts*

I need not labor the point farther. Within economics, we economists rate writers of the past in a quite different order than does the outside world. And, as far as economic analysis itself is concerned, the present generation of economists gives a quite different ranking than did earlier generations of economists.¹

Now I am not really concerned here with the history of pure theory and the changing fortunes of different writers. A critic can rightly argue that Gide and Rist were writing a history of economic *doctrines*, while Schumpeter was writing a history of economic *analysis*; and hence I ought not to be surprised if there turns out to be a considerable difference in emphasis. Who would want to deny that Cournot,

¹ There is a great deal of evidence that this is more than the view of the *avant garde* and more than a passing fad. One straw in the wind would be to examine the successive revisions since 1939 of a book that did not begin with any prejudice in favor of economic analytics, Eric Roll, *A History of Economic Thought*, 3d ed., Englewood Cliffs, N.J., 1956.

writing in 1838, had an analytical power and freshness that is breathtaking? But who in his right mind could argue that Cournot had been a great force on the history of ideas: what Paris *salon* preoccupied itself with sellers of mineral water? Except through possible indirect influences of his teachings, Cournot's impact on ideology must surely have been negligible.

I quite agree. In many ways the history of a subject's technical analysis is easier to write precisely because it need not involve the determination of social influencings.² Tonight we do not want to linger on analytics, except perhaps to draw the obvious moral that, if economists spend more and more of their time on highly technical mathematics and statistics, they must not be surprised if the intelligent man of affairs comes to ignore this part of their activities. It is true that Voltaire and Madame du Châtelet, his great and good friend, wrote profusely on Newton's universal law of gravitation; but this really amounted to vulgarization of that subject, gross vulgarization on the part of Voltaire and neat vulgarization on the part of that gifted lady. While we should not minimize the importance of vulgarization—I mean communication—we must not blink the fact that this is an area where Gresham's Law operates in its most remorseless fashion: vulgar vulgarization drives out subtle, just as strong ideology outsells weak.

The split, between "the inside look" of a subject in terms of the logic and experience of its professional development and its implications for the man-in-the-street or the academician down the campus, is well recognized. No one gets a Nobel Prize for an essay on the relationship of quantum mechanics to free will and God; but one who has already received such a prize will get a better hearing for his random or systematic thoughts on the topic. Nor, these days, do you get appointed to chairs of economics by virtue of your social elo-

² If the history of science is still generally in a crude form, that is primarily because scholars have just recently begun to take it seriously. In the case of mathematics, there is a most ludicrous ignorance of the true sequence of contributions: if a formula, such as Lagrange's interpolation formula, is attributed by name to a person, the betting is good that small research will show it appeared in earlier writings. What I have in mind here is not the statement that there is nothing new under the sun and all knowledge is a repetition of previously known knowledge: on the contrary, such a statement is the reverse of the truth; mathematical knowledge has been cumulative and, with enough research and luck, we might hope to clean up the false history of the subject. The situation in mathematics is especially simple if one takes the view that the objects of mathematical research are theorems and that most importance attaches to the date of their first rigorous *proof*. Thus, it is meaningful to say that the "strong ergodic theorem" goes back to G. D. Birkhoff in 1931, and that J. v. Neumann deserves the credit for two-person zero-sum game theory. (But if one is also interested in conjecture, heuristics and partial insight, the matter is not so simple. Some modern mathematicians, one feels, will rename Fermat's Last Theorem to Schwartz's Theorem if the first man to prove it happens to be named Schwartz.) In economics, datings are harder: thus I cannot tell you who first disproved "the labor theory of value," much less who originated it.

quence; indeed, until academic tenure has come, you are best advised not to write for *Harpers* or the *Manchester Guardian* (to say nothing of the *National Review* or the *New Republic*) lest you be indicted for superficiality.

Good writing itself can be suspect. (I interject that if good literary style is indeed a sin, it is not a sin that is very widespread among our economics brotherhood.) John Stuart Mill tells us in his remarkable autobiography that his father, James Mill, thought poetry was overrated; but that since poetry *was* overrated, young John ought to try his hand at it. I believe it was Yale's Tjalling Koopmans, himself a creative economist blessed with clarity of style, who advanced the austere argument that exceptionally fine writing is a biasing factor which might bring to an argument more attention and credence than it really deserved. There is something to this: but no one should be taken in by the false corollary that the *intrinsic* worth of an argument is enhanced by virtue of its being phrased obscurely. Having said this, one must add grudgingly that, while obscurity may not add to the intrinsic worth of an argument, it has often been a contributory ingredient to fame. How many Marxians have read *Das Kapital*—I mean read it through? Bernard Shaw once claimed that he was the only man in England, including H. M. Hyndman and contemporary Marxian leaders, who had read the book. Shaw himself was observed at the British Museum by Harcourt³ in the act of reading Marx (in the French translation, of course); so at least part of Shaw's claim may be true. But Shaw was sitting in the British Museum with a copy of *Capital* stretched before him and beside it a copy of the score of *Lohengrin*; one can guess on which he could have earned the higher exam grade.

This brings me to mention one of our members who is far away to-night toiling on a distant shore. I refer of course to J. Kenneth Galbraith and have in mind *The Affluent Society*. To compare this book with *The Theory of the Leisure Class* would be in some of our common rooms, to damn it; in some, to praise it. Gibbon tells us how he found his *Decline and Fall* on every boudoir table soon after its publication. When we economists think how often in recent years people have been asking us, "What do you think of *The Affluent Society*?"—and how embarrassing the question has been to so many of us busy beavers—we can appreciate that this work stands as good a chance as any of being read and remembered twenty years from now.

Yet always members of a guild have their defenses against the man who ventures away from home. "It was all in Keynes's 1930 *Saturday*

³ This gives Sir William Harcourt a second claim to fame, beyond that of his famous one-tenth truth: "We are all socialists now."

article, 'Economic Possibilities for Our Grandchildren.' " The title of the title came from Tawney's *The Acquisitive Society*. " About the need to spend more these days on public rather than private wants was already made eloquently by Alvin Hansen and in any case it involves a value judgment not a scientific finding. " Harvard professors may have incomes high enough to satiate them, but most people do not. " So what's the matter with big automobiles? Didn't you ever hear of Freud? And how about Jeremy Bentham's dictum concerning the equality of pleasures, 'Pushpin is as good as poetry?' " "Are commercially created wants different, or less satisfying, or less worthy than natural wants, whatever those may be?" "The book's style is superficially attractive but its message is not profound."

I am afraid people in the boudoir, today or twenty years from now, will not seek the benefit of our professional reactions. Within the body of economics itself, *The Affluent Society* will find a place that is proportionate to the new predictions about economic regularities it may suggest. But whatever the later verdict about the operational meaning of its propositions, we can no more recall it or wipe out half a line of it than we can—by professional exegesis—expunge Henry George's *Progress and Poverty* from the historical record.

III. Political Economists: Ourselves to Know

Leaving aside how our own profession rates and ranks the craftsmen of its trade, I now want to close in on the differences between our view of ideologies and *Weltanschauungen* and that of the intelligent man of affairs. Who do we think were the great *political* economists as against just great economists?

Adam Smith. Going back no earlier than Adam Smith, we can let Smith stand for the classical tradition. And, in my telescope, he stands on a pinnacle. While I think Smith is underrated as an economic theorist, it must be admitted that his impact as a political economist does not rest upon his having improved upon theories of his friend David Hume; nor upon his having anticipated the various refinements of Malthus, West, Ricardo, Torrens, and John Stuart Mill.

Here is a case where the inside view and the outside view are one. The intelligent man of affairs, and even Macaulay's schoolboy, were profoundly influenced by Smith's attacks on mercantilism and state interference and by his spirited championing of *laissez faire*. To be sure, the amateur never appreciates the nuances of Smith's position: e.g., his skepticism about the businessman's passion for tough competition; his definite role for limited government; his general pragmatism rather than dogmatism.

Still, it is significant that the great critics of the classical economists generally chose to controvert the *Wealth of Nations* rather than the writings of later members of his school.

David Ricardo. In time Ricardo came to be the whipping boy of the continental romantics and historicists. Yet there is not much evidence that they had to read him closely in order to find fault with his abstract methodology. I must confess that I find Ricardo hard to give semester-type grades to. He is par excellence an economist's economist. A sweet man, Ricardo is certainly one of the luckiest that ever lived. And here I have not so much in mind his success in speculating, although he was no slouch in that department, as some facts from his biography illustrate.⁴

Ricardo was lucky in being on the spot when the Napoleonic Wars were causing the value of money to misbehave in the most interesting fashion. He was lucky to have James Mill as taskmaster and press agent. He was lucky in having been deprived of higher education, so that his resulting written expositions had the clumsiness necessary to give that ingredient of obscurity so conducive to a reputation for great profundity. Finally, and I hope it comes as no anticlimax, Ricardo was lucky in being profound.

⁴Cut off for marrying outside his faith with a few thousand dollars, within twenty years Ricardo had become a millionaire a few times over, the equivalent in this present day of taxes, higher prices and higher general real incomes, to tens of millions of dollars. The Duke of Wellington may have regarded the battle of Waterloo as "a damned near close-run thing," but David Ricardo urged before the battle that his friend Robert Malthus go the limit in holding British government bonds; and Malthus, a parson with small means and a convex-from-above utility function, lived to reproach himself for not having followed that advice. Retiring young from business to devote himself to leisure, study, politics, and being a gentleman, Ricardo astutely realized that his numerous children were not chips off the old block in financial acumen; so, and this is purely my conjecture, being convinced by his studies that land rent tends to rise as capital and labor progressively grow, Ricardo arranged to buy self-sufficient gentry estates for his offspring, succeeding so well in his purpose as to keep his descendants out of shirtsleeves until the end of the century and, at the same time, conferring upon them the bonus of being absorbed into county society. At the urging of his friends, Ricardo indulged in conspicuous consumption by buying his way into Parliament. (He did this by invoking the later doctrine of "opportunity cost": i.e., he lent £20,000 interest-free to an Irish holder of a rotten borough, one which Ricardo never bothered to visit.)

Ricardo's parliamentary career was something of an anticlimax. He was not a gripping speaker, and the build-up of his reputation was a grave handicap. It is interesting that Ricardo was a genuinely disinterested man and generally favored measures that were against the interest of landlords. When once accused of having a special interest in some proposal, he candidly replied that his interests were so diverse that he himself could not tell on which side the balance of his Hicksian income effects would fall, thus showing himself to be a master of *quadratic* programming of the type needed for optimal Markowitz portfolio balancing; and little wonder, since in 1817 Ricardo's comparative cost theory had involved him in linear programming. One feels he was a natural at trading in, and arbitrating, Lagrangean multipliers and other dual-price variables. See Volume 10 of the Sraffa edition of Ricardo's work for most of the facts from which this account has been fabricated.

Once I had heard George J. Stigler say that Malthus was the best of economists, I heard myself replying: "That's funny. David Ricardo is the most overrated of economists." Probably this conversation tells more about Stigler and me than about Ricardo or Malthus. What I had in mind was this: Ricardo was a keen reasoner and almost always comes out to be logical in the end, if you follow his implicit and explicit definitions and assumptions. But he does not necessarily rough weather of the matters he deals with, and the reader is inclined to think him miraculous for being able to get to the bottom of the holes he has dug for himself by his mode of attack and exposition. Analytically, his theory of rent is excellent but not clearly better than or earlier than the contemporaneous theories of rent of Sir Edward West and Malthus. Ricardo did have a rigorously handled general equilibrium model of primitive type; but its dynamics merely elaborate on what is already in the population theory of Malthus and Smith, and ought not today to be regarded as very "magnificent."

His greatest tour de force was the theory of comparative advantage; and though it would be simply irrelevant to point out that Isaac Ger-vaise had developed similar notions in the preceding century, one has to take into account that Colonel Torrens, a mere mortal, had also developed pretty much the same analysis at pretty much the same time. Moreover, in most of the debates that Ricardo's work gave rise to, the points of his critics were well taken, not so much in proving that Ricardo's reasoning was wrong in terms of its assumptions, as in pointing out that his conclusions were apt to be misunderstood and were of limited significance. Instead of regarding it as a scandal that so much ink has had to be split over Ricardo's flirtations and retreats from a labor theory of value, his admirers think this makes him a seminal thinker.⁵ In short, the notion of Keynes that "Ricardo's mind was the greatest that ever addressed itself to economics" does not agree with my assessment of his high I.Q. or creativeness in relation to that of other economists.

Ricardo's name was certainly used as a rallying cry for the school that favored freer trade in England. But Smith had already made the needed points; if exaggeration is what was needed, Herbert Spencers and Bastiats can usually be found who are unencumbered by the subtleties of refined economic analysis. Moreover, detailed researchers will more and more reveal that the Ricardian School provided the background for early Victorian thinking but did not, in a detailed fashion

⁵ See my two papers on Ricardian systems, which elaborate on my views and give a physiocratic interpretation, "A Modern Treatment of the Ricardian Economy," *Quart. Jour. Econ.*, I, Feb. 1959, 73, 1-35; II, May 1959, 73, 217-31; also my paper on related Marxian models, "Wages and Interest: A Modern Dissection of Marxian Economic Models," *Am. Econ. Rev.*, Dec. 1957, 47, 884-912.

satisfactory to the historian of direct political development. Important influences upon such legislative events as the repealing of the Corn Laws. Indeed, Ricardo was subtle enough to muck up the un- minded case for harmonious free trade.

Jeremy Bentham, a friend of James Mill and Ricardo, was a character who would have been unbelievable if he had appeared in the nineteenth century. (He once seriously asked James Mill for his eldest son. James refused, that an excessive demand on friendship, but did lease him John to clean out the Augean stables of Bentham manuscripts; this was one of the feats of Hercules that John accomplished with distinction and at incredibly early ages.)

Bentham's influence on modern law and institutions has always been recognized by historians as having been great: the nineteenth century where legislation is concerned is truly Bentham's shadow writ large, as Dicey has said. Crane Brinton once quipped: "The New Deal had a good deal of old Bentham in it."⁶ And I have dared to suggest that the logic of Bentham's position would in later times have gone beyond his fortuitous individualism, so that his thought is really congenial to that of Fabians like Sidney Webb. Bentham, though not an economist's economist nor even primarily an economist, had I am sure an influence far greater than that of Ricardo.

Have I now not proved too much? Why then has Ricardo had the good press with posterity if my strictures are at all near the mark? I think the answer depends upon a different kind of luck. David Ricardo happens to be the darling both of the liberal economists who followed in his direct line and of the Marxian critics of capitalism. Like me, you may not agree with Ricardo's famous letter to Trower which says, "Political economy . . . should rather be called an enquiry into the laws which determine the division of the produce of industry amongst the classes who concur in its formation." But you can perceive how Ricardo's laconic and unsparing remarks about distribution would stimulate the so-called Ricardian socialists who regarded property incomes as exploitation of labor. And once Karl Marx took him up as an object of worthy study, Ricardo was, so to speak, in on both sides of the street. Having Piero Sraffa as an editor merely capped Ricardo's good luck.

John Stuart Mill. I pass by Nassau Senior and the other classical writers to mention Mill briefly. Mill was modest; Marshall was not. The world takes people too much at their word. The result is that Marshall's claims to analytical originality are received too seriously;

⁶ C. C. Brinton, *Ideas of Men: The Story of Western Thought*, London 1951, p. 392. Incidentally, Brinton's index has between Rhodes, Cecil and Richards, I. A. no Ricardo, David.

and Mill's forging of the general-equilibrium concept of demand and supply schedules, even before the 1838 date of Cournot's definitive partial-equilibrium formulation, is ignored by all but the true gourmets of economic theory, who recognize it as an analytical contribution of the first magnitude.

John Stuart Mill, son of a dogmatic father, was himself eclectic and had an engaging ability to change his mind when new facts or arguments became available or merely from rethinking old attitudes.⁷ It is almost fatal to be flexible, eclectic, and prolific if you want your name to go down in the history books: get known for one idea, however farfetched it may be—such as that the rate of interest has to be zero in the stationary state or that land is the source of all value—and you are sure to get at least a paragraph in the history books for it. Also, Mill had what Nietzsche once referred to as an offensively clear style.

Yet so great was Mill as a thinker and reflector that he was able to overcome these handicaps. His views on liberty will, even in the post-Freud world, never go out of date and can perhaps be summarized in the words of Mrs. Pat Campbell, Bernard Shaw's pen-mistress: People should be allowed to do anything they like—provided only they don't scare the horses in the street.

Mill is truly a transitional figure. Shaw shows this in one of his wittiest plays, *You Never Can Tell*. A typical Shavian New Woman returns from the West Indies after an absence of some 20 years to find that all her revolutionary Millian notions have become old-hat, superseded by new Fabian notions. The same conflict between the eighteenth and twentieth century went on in Mill's own mind: it was fa-

⁷Sweden's Gustav Cassel, whom the public regarded as about the world's leading economist in the 1920's and who might have become a truly outstanding scholar if his temperament had been different, is shown by the following story to be a good opposite to Mill. H. C. Sonne, the distinguished merchant banker and chairman of the National Planning Association, has told how Cassel visited at Sonne's family home in Denmark in the days around the First World War. A guest happened to mention that some scholar had just made a fresh study of the relationship between the price level and gold supply and had come up with conclusions strongly at variance with the famous Cassel thesis. When asked what he intended to do about it, Cassel replied as follows. "I have a son-in-law whom I have put through Divinity School at some considerable expense. Now that he has graduated and qualified for his diploma, he comes to me and says that he has lost his faith and asks what to do. My advice to him was simple: 'Just carry on as if nothing had happened'."

Relevant too is a conversation I had last month in London after I had given the Stamp Memorial Lecture in the University of London for 1961. In that lecture I discussed, among other things, some of the problems of economic forecasting and stressed the need for scientific validation and the desirability of each forecaster's going back ruthlessly to review *ex post* his *ex ante* predictions. "A great mistake," I was told by one of the best forecasters in English academic life. "It is fatal ever to read what you have earlier written. It breaks your nerve as a forecaster." His lips were smiling but his eyes looked serious.

ther James against friend Harriet with John advancing two steps and going back one. It is ironical that evolutionary socialism in England and elsewhere finds itself today backing up from its post-Benthamite insistence on nationalization of the means of production to something like the society dimly envisaged by Mill. No wonder Karl Marx hated Mill and denounced him as a vulgar bourgeois economist. Marx could recognize the enemy when he saw him. (Curiously, the well-read Mill either never heard of Marx or never thought him worth mentioning—this despite Mill's interest in the Revolution of 1848, the *Communist Manifesto* by Marx and Engels of that date, and Mill's survival beyond the 1867 date of *Capital* Vol. 1.)⁸

Karl Marx. From the viewpoint of pure economic theory, Karl Marx can be regarded as a minor post-Ricardian. Unknowingly I once delighted a southern university audience: my description of Marx as a not uninteresting precursor (in Volume 2 of *Capital*) of Leontief's input-output analysis of circular interdependence apparently had infuriated the local village Marxist. Also, a case can be made out that Marx independently developed certain vague apprehensions of underconsumptionist arguments like those of the *General Theory*; but on my report card no one earns too high a grade for such a performance, since almost everyone who is born into this world alive experiences at some time vague intimations that there is a hole somewhere in the circular flow of purchasing power and production. This seems to come on the same chromosome as the gene that makes people believe in Say's Law; and Marx's bitter criticisms of Rodbertus for being an underconsumptionist shows us that he is no exception.

As long as I am being big about admitting small merits in Marx, I might mention a couple of technical suggestions he made about business cycles that are not without some interest: Marx did formulate a vague notion of 10-year replacement cycles in textile equipment as the determinant of cyclical periodicity—which is an anticipation of various modern "echo" theories. He also somewhere mentioned the possibility of some kind of harmonic analysis of economic cycles by mathematics, which with much charity can be construed as pointing toward modern periodogram analysis and Yule-Frisch stochastic dynamics. A much more important insight involved the tying up of technological change and capital accumulation with business cycles, which pointed ahead to the work of Tugan-Baranowsky (himself a Marxian), Spiethoff, Schumpeter, Robertson, Cassel, Wicksell, and Hansen.

What can be gold in the field of fluctuations can be dirt in the context of pure economic theory. Marx claimed in Volume 1 that there was some interesting economics involved in a labor theory of value,

⁸ Cf. A. L. Harris, *Economics and Social Reforms*, New York 1958.

and some believe his greatest fame in pure economics lies in his attempted analysis of "surplus value." Although he promised to clear up the contradiction between "price" and "value" in later volumes, neither he nor Engels ever made good this claim. On this topic the good-humored and fair criticisms of Wicksteed and Böhm-Bawerk have never been successfully rebutted: the contradictions and muddles in Marx's mind must not be confused with the contradictions and mud-dles in the real world.

Marx, like any man of keen intellect, liked a good problem; but he did not labor over a labor theory of value in order to give us moderns scope to use matrix theory on the "transformation" problem. He wanted to have a theory of exploitation, and a basis for his prediction that capitalism would in some sense impoverish the workers and pave the way for revolution into a new stage of society. As the optimism of the American economist Henry Carey shows, a labor theory of value when combined with technological change is, on all but the most extreme assumptions, going to lead to a great increase in real wages and standards of living. So the element of exploitation had to be worked hard. Here Marx might have emphasized the monopoly elements of distribution: how wicked capitalists, possessed of the nonlabor tools *that are essential* to high production, allegedly gang up on the workers and make them work for a minimum. Or, were it not for his amazing hatred toward Malthus and his theory of population, Marx might have kept wages dismal by virtue of biological conditions of labor supply. The monopoly explanation he did not use, perhaps because he wanted to let capitalism choose its own weapons and assume ruthless competition, and still be able to show it up. Marx tried to demonstrate the same dramatic minimum character of real wages by means of his concept of the "reserve army of the unemployed."

Here is the real Achilles' heel of the Marxian theory of distribution and its implied prophecies of immiserization of the working classes. Under perfect competition, technical change will raise real wages unless the changes are so labor-saving as to raise the rate of maintainable profit immensely; Joan Robinson and others have pointed out how contradictory is Marx's notion that both profit rates and real wages can fall once Marx jettisons Ricardo's emphasis on the scarcity of land and the law of diminishing returns. Marx simply has no *statical* theory of the reserve army. If an appeal is made to a vague dynamic theory of technological displacement or recruitment from the country, close analysis will suggest that Marx (like Mill) was a very bad econometrician of his times, not realizing how much real wages in Western Europe had been raised by new techniques and equipment; and he was a bad theorist because his kind of model would almost certainly lead

to shifts in schedules that would raise labor's wages tremendously, in a way more consistent with the 1848 *Communist Manifesto's* paeans of praise for the capitalistic system than with his elaborated writings.⁹

In brief, technical change was gold in giving Marx cyclical insights, and dirt in giving him secular insights or an understanding of evolving equilibrium states. I should warn you that this is my opinion, and that I have always been surprised that I should be a virtual monopolist with respect to this vital analysis.

So far I have been talking about Marx as an economist. And I have been doing my best, subject to truth, to find some merit in him. (You may recall Emerson's neighbor in Concord: when he died the minister tried to find something to say at the funeral eulogy and ended up with, "Well, he was good at laying fires.") Even this represents a resurrection of Marx's reputation. Keynes, for example, was much more typical of our professional attitudes toward Marxism when he dismissed it all as "turbid" nonsense. (In view of the tendency of the radical right—for whom all Chinese look alike—to equate Keynesianism with Marxism, this ironical fact is worth nothing; and also its converse, since there is nothing communists deplore more than the notion that capitalism can be kept breathing healthily by the Keynesian palliatives of fiscal and monetary policy.)

Technical economics has little to do with Karl Marx's important role in the history of human thought. It is true that he and his followers felt that their brand of socialism differed from the sentimental brands of the past in that Marxist socialism was scientifically based and, therefore, had about it an inevitability and a special correctness. I need not labor the point before this group that the "science" involved was not that body of information about commercial and productive activity and those methods of analyzing the behavior relations which we would call economics. Political economy in our sense of the word was the mere cap of Karl Marx's iceberg. *Marx's bold economic or materialistic theory of history, his political theories of the class struggle, his transmutations of Hegelian philosophy* have an importance for the historian of "ideas" that far transcends his façade of economics.

Finally, one must never make the fatal mistake in the history of ideas of requiring of a notion that it be "true." For that discipline, the slogan must be, "The customer is always right." Its objects are what men have *believed*; and if truth has been left out, so much the

⁹ If migration from the country kept wages down to a city minimum, then the average wage and living standard of country-cum-city would be raised in accordance with the optimization desired by a technocrat—unless, again, Malthusianism is admitted back into the rural hovel.

worse for truth, except for the curiously-undifficult task of explaining why truth does not sell more successfully than anything else. Marx has certainly had more customers than any other one aspiring economist. A billion people think his ideas are important; and for the historian of thought that fact makes them important, in the same way that he would have to regard as diminished in importance the subject of Christianity, were it conceivable that it had been the religion merely of a transitory small group who once occupied the present country of Jordan or the state of New Mexico.

Alfred Marshall. What killed Mill for economists was not the socialism that killed it for Shaw's no-longer-New Woman. The marginalist school of Jevons-Walras-Menger perpetrated the murder. The roster of neoclassical economists would include the names of Böhm-Bawerk from Austria, J. B. Clark from the United States, Pareto from Italy, Wicksteed from England, and Wicksell from Sweden. But, for all that I have said earlier about his overvaluation in the market for reputations, few will doubt that Alfred Marshall of Cambridge is the prototype as *political economist* for this group. Marshall may now be old hat, but in his day he was some headpiece.

Marshall had strong social sympathies. At the same time he realized the harms that precipitate reform may bring. He was the prophet of moderation. If you graft Keynesian models of income determination on his thought and update his Victorianisms, you come close to the median member of this Association. His pupils filled, Foxwell could say by 1888, half the chairs of political economy in the United Kingdom; his influence permeated the other half and, methodologically speaking, today we are all Marshallians in the same sense that we are all higher primates.

But what has been Marshall's role in the history of ideas, the panorama of human thought? Never has he had one-hundredth the notice of, say, Henry George. I remember talking to the aged Frank Taussig at a Harvard Society of Fellows dinner before the war. Taussig quoted in despair a recent remark of John Dewey that Henry George was the greatest economist America had ever produced. George was the whipping boy for the economists just before my time; but within my time as a high school student in the Middle West, you could still find vestigial single-taxers, the old principal of my high school being one and my civics teacher another. George was not original in attacking incomes that come from land; as Foxwell said long ago, nationalizers of land we have always with us. This is understandable from the Hume-Ricardo recognition of rent as a price-determined (rather than price-determining) surplus to a factor in inelastic supply; but, as I have recorded elsewhere, my implicit belief that George gave a good

statement of Ricardian rent theory will not stand up after a search through *Progress and Poverty* for suitable quotations to put in an anthology. While the single-tax movement is recognizable today as being adverse to socialism, Henry George's attack on the inequality of property ownership in land was influential in turning many people toward socialism: thus Shaw tells us he became a socialist after hearing Henry George speak in London.¹⁰

Let us leave aside impact on the *hoi polloi*. What was Marshall's influence over his long life on the educated man of affairs? For years I looked for every trace I could find in books to show that someone other than a professional economist or student had read Marshall. I realize Marshall himself thought he was writing for the businessman; but anyone who looks at the *Principles* will realize that no businessmen in good Queen Victoria's time or since would be likely to find it attractive. (Actually Marshall's literary style is excellent, his graphs are in footnotes, and his rather awkward mathematics is buried in special notes at the end; but all this was to no avail.) I was able to come up essentially with only two bits of evidence, one negative and one positive. Pollock in his letters to Justice Holmes urged him to read Marshall; Holmes, who was a man of the most catholic interests, replied that he had tried it and it was not the dish for him. On the positive side, C.C.N.Y.'s great philosopher, Morris Cohen, reported somewhere that his inclination to be an eclectic in philosophy had received inspiration from Alfred Marshall's eclecticism in economics.

To be sure, Marshall taught at a leading world institution where half the English upper classes received their instruction. But actually he taught at Cambridge little more than 20 years, not very much longer say, than, I have taught at M.I.T. Sixty was a generous number for those who attended his popular lectures, and that was the beginning attendance not the final. As I know from personal conversations with Alfred North Whitehead, Marshall's contemporaries at Cambridge did not like him as a man ("He was a popish man who treated Mary Marshall very badly." "A second class mind?"); and one gets

¹⁰ Later Shaw went successively from Marxism to Jevonsism with a Fabian twist. Philip Wicksteed's conversion of Shaw away from Marxism is one of the most amusing and incredible incidents in the history of thought: for once a rational argument changed, or seemed to change, someone's mind.

It must have been on that same trip to England that Henry George debated Alfred Marshall in Oxford: little David beat Goliath, if we can believe the record; in part perhaps because Marshall was a home-boy, and the well-to-do undergraduates of those days started out hostile to George; there is also the fact gleaned from Henry George's biography that he slept miserably on that trip and the night before the debate. Playing the parlor game of Charles Lamb and William Hazlitt as to which characters in history one would like to meet, I would plunk for being present when Alfred Marshall debated Henry George.

the impression from autobiographies of such contemporaries as J. J. Thomson, the discoverer of the electron and Nobel Prize winner, that they had no great opinion of the economics being offered at that time in Cambridge.

IV. *We Happy Few*

If then Marshall and neoclassical writers have had influence upon the affairs of men, and I think they have had pronounced influence, we must regard these influencings as being indirect rather than direct.

For a long time John Maynard Keynes was known for one famous quotation, the casual remark: "In the long run we are all dead." Now that Keynes himself is dead, he is best known for a different quotation:

. . . the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas. Not, indeed, immediately, but after a certain interval; for in the field of economic and political philosophy there are not many who are influenced by new theories after they are twenty-five or thirty years of age, so that the ideas which civil servants and politicians and even agitators apply to current events are not likely to be the newest. But, soon or late, it is ideas, not vested interests, which are dangerous for good or evil.

This is fine writing. And no doubt it is flattering to our egos. But is it really true? Keynes did not specify what academic scribblers he had in mind, and I am not sure how easy it would have been for him to do so. (Thus, when we see a politician favoring protective tariffs or a balanced budget, do we have to look for any profound analysis from some earlier thinker or can we not simply reflect that most people generate such notions almost unthinkingly? Yet, even if that is so, what are we to conclude in the case where we observe a politician favoring free trade or deficit-financing? The issue is certainly not a simple one.)

The leaders of this world may seem to be led around through the nose by their economist advisers. But who is pulling and who is pushing? And note this: he who picks his doctor from an array of competing doctors is in a real sense his own doctor. The Prince often gets to hear what he wants to hear.

Where does that leave us then as economists? It leaves us where

we ought to be. Our map of the world differs from that of the layman. Perhaps our map will never be a best seller. But a discipline like economics has a logic and validity of its own. We believe in our map because we cannot help doing so. In Frank Ramsey's beautiful quotation from William Blake:

"Truth can never be told so as to be understood and not be believed."

Ours is an uncertain truth and economic scholars are humble about its precision—but our humbleness is built out of knowledge, not out of ignorance.

Not for us is the limelight and the applause. But that doesn't mean the game is not worth the candle or that we do not in the end win the game. In the long run, the economic scholar works for the only coin worth having—our own applause.¹¹

¹¹ Lest I be misunderstood, I elaborate. This is not a plea for "Art for its own sake," "Logical elegance for the sake of elegance." It is not a plea for leaving the real-world problems of political economy to noneconomists. It is not a plea for short-run popularity with members of a narrow in-group. Rather it is a plea for calling shots as they really appear to be (on reflection and after weighing all evidences), even when this means losing popularity with the great audience of men and running against "the spirit of the times."

RESEARCH ON HOUSEHOLD BEHAVIOR

By ROBERT FERBER*

The purpose of this article is to survey the main empirical research of recent years on household behavior. Although the emphasis is on empirical work, principal theoretical developments are also reviewed, partly because of their relevance to an understanding of current thinking in the field and partly to place the empirical studies in proper perspective.

It should be stressed that this article relates to consumer behavior at the microeconomic level. Although various parts touch on problems of aggregation and of macroeconomic relations, comprehensive coverage of these areas is outside the present scope. Furthermore, the focus is on spending and saving behavior rather than on the income or other economic or noneconomic behavior aspects of the consumer. At the same time this article necessarily transcends the usual boundaries of economics, in view of the growing importance of other disciplines to this area, particularly marketing, sociology and psychology.

Virtually all of the developments covered in this article relate to the period since the Second World War. This hardly constitutes much of a limitation considering the tremendous amount of research that has taken place during this period. As it is, this material is so extensive and diversified that only the highlights can be covered in a relatively short article such as this.

The great bulk of studies of household behavior in the past fifteen years have dealt with one or more of the following aspects of the subject: (1) Theories of spending, or saving, behavior; (2) Influence of variables other than income on spending and saving; (3) Determinants of asset holdings; (4) Determinants of specific expenditures; (5) Decision processes.

This classification accordingly serves as the framework for this article. Admittedly, it focuses entirely on the determinants of household

*The author is research professor of economics, Bureau of Economic and Business Research, and professor of economics in the department of economics, University of Illinois. He would like to thank Margaret Reid, Marianne A. Ferber, and Walter McMahon for their helpful comments. He would also like to express his appreciation to Anne Harper for assisting with the preparation of the bibliography.

[This is the fourth of a series of survey articles for which financial support has been provided by the Rockefeller Foundation.—*Editor*.]

behavior, and ignores the two other basic aspects of this subject, namely, the effects of household behavior on other sectors of the economy, and the measurement of household behavior. The fact remains, however, that relatively little work has been done in these areas, despite their great importance. They are considered briefly in the final section, dealing with future directions for research.¹ Excluded also are those studies dealing with the purchase behavior of a particular population, or reference group, and studies dealing with the choice of brands or of shopping locations. Some of these studies are covered in connection with the determinants of specific expenditures. To cover all of them, however, is too much for this article, aside from the fact that these studies are primarily of a more routine nature.

I. *General Theories of Spending or Saving Behavior*

Three general theories currently exist on the determinants of total consumer spending: the *absolute income hypothesis*, the *relative income hypothesis*, and the *permanent income hypothesis*. Though radically different in interpretation, they nevertheless possess certain properties in common. One such property is their purported generality. Each has been used on time series as well as on cross-section data and to derive macro- as well as micro-relationships.² Each was advanced originally in terms of individual behavior and then generalized to aggregate behavior, sometimes with explicit recognition of the aggregation problem, and at other times largely ignoring it on the apparent presumption that nonlinearities or distributional effects are relatively unimportant.

Each hypothesis postulates a relationship between consumption and income, though the concepts underlying these terms may vary substantially. In other words, the primary concern is to isolate the influence of income, and occasionally of wealth, on consumer spending, holding constant the effect of other possibly relevant, less important variables—age, family composition, location of residence, education, etc. Each is the subject of wide controversy, receiving support from some empirical studies but not from others. Finally, each when first presented appears deceptively simple, at least in theory, but when it comes to implementation, proponents of the same hypothesis often

¹ Omitted also is the normative aspect of how households *should* behave. Hardly any empirical research has been devoted to this question, with the possible exception of exploratory studies in the measurement of utility. In its more pedestrian aspects, the normative question falls within the realm of home economics.

² In the latter case, the application has often been to groups of households rather than to individual households, particularly in the case of the permanent income hypothesis, on the ground that the importance of erratic factors is so great for individual households as to obscure more basic relationships.

disagree with each other on appropriate definitions and approaches. This will become clear from a consideration of each hypothesis in turn.

Keynes *GA. Absolute Income Hypothesis.*¹ "I. men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their income" [192, p. 96]. Whether or not this is the original statement of the absolute income hypothesis, there is no doubt that this statement by Keynes stimulated much empirical work to test this hypothesis and to derive "the consumption function." Many of these studies were carried out on time series, the general practice being to correlate aggregate consumption expenditures over time with aggregate disposable income and various other variables. They need not concern us here except to note that invariably they "corroborated" the hypothesis, producing very high goodness of fit (adjusted correlation coefficients of .98 or more), with current income accounting for the bulk of the variation in consumption, the average and marginal propensities being less than unity, and with the marginal propensity less than the average propensity.³ *GT 20*

One early modification of the absolute income hypothesis was brought about by a theoretical controversy regarding the existence of any automatic force to assure full-employment equilibrium. Keynes took a negative position, but others showed that a full-employment equilibrium position could exist if consumption expenditures depended on wealth as well as on income, the "Pigou real balance effect" [138].⁴ It was only in the postwar period that data became available to test the relevance of a wealth variable. Such tests as were made did tend to show that aggregate consumption was influenced by this variable, though nowhere to the extent of the influence of current income [69] [95]. It is pertinent to note, however, that the early postwar years were characterized by high asset-income ratios, low stocks of durables, and relatively little debt. }✓

At the micro level, many studies had been carried out prior to the advent of *The General Theory* but their focus invariably was on ascertaining budget relations for different groups of families or deriving Engel curves for particular components of expenditure.⁵ In retrospect, such of these studies as were applicable appeared to corroborate the absolute income hypothesis. Indeed, it was this hypothesis that served as the basis for the derivation of estimates of aggregate expenditures for different population groups in 1935-36, namely, by "blowing up"

³ For a summary of these studies to 1950, see Ferber [41]. An extensive bibliography of these earlier studies has been compiled by Orcutt and Roy [135].

⁴ For a somewhat different interpretation, see Hansen [71]

⁵ These are reviewed in Stigler [148]. A fairly comprehensive listing of these studies will be found in Williams and Zimmerman [169].

average consumption observed at each income level in the 1935-36 Consumer Purchases Study [161].⁶ The absolute income hypothesis also served as a basis for the derivation of aggregate forecasts of post-war consumption patterns, particularly the consumption patterns that might be expected under full employment [28].

In its empirical applications the absolute income hypothesis has generally followed one of two forms. One form has been to express the level of saving, or of consumption expenditures,⁷ as a function of income and of other variables, i.e.:

$$(1) \quad S = a + bY + cZ + u \quad \text{--- (1)}$$

where S represents saving, Y is income, Z is a conglomeration of other variables, u is a stochastic term, and the other letters represent parameters.⁸

The second form involves expressing the saving *ratio* as a function of the same independent variables, i.e.:

$$(2) \quad \frac{S}{Y} = a' + b'Y + c'Z + u' \quad \text{--- (2)}$$

Each of these forms has advantages and limitations. Thus, in equation (1) the marginal propensity is a constant and, if logarithms of the variables are used, the income elasticity is also constant, namely, b . Equation (2) does not possess this convenient property but may be more realistic for this reason. Parameter estimates based on equation (1) are subject to the danger of bias from two sources: the parameter estimates may be dominated by extreme values, and u is not likely to be independent of S . Expressing dollar variables in logarithms (assuming absence of negative values) removes this tendency somewhat, but not altogether. In actual practice, both forms have been used.⁹

{ Questions about the adequacy of the absolute income hypothesis arose because of its apparent inability to reconcile budget data on saving with observed long-run trends. Estimates of national saving and other aggregates derived by Kuznets [105] [106] and later by Goldsmith [65, Vol. 1, pp. 75-87] indicated that the aggregate saving ratio had

⁶ The actual aggregation procedure was more complicated, but was based on this principle.

⁷ It is perhaps needless to note that consumption functions and saving functions are the same, in theory, one being the complement of the other. However, substantial differences can be obtained in empirical work according to which term is being measured.

⁸ We shall follow the usual distinction between *saving* and *savings*, the former representing a flow, that is, the difference between income and consumption during a particular period, and the latter representing a stock as of a certain point in time. Unless otherwise specified, saving is defined as the amount set aside out of current income rather than as the net increment in wealth.

⁹ For applications of these functions at the microeconomic level, see Mendershausen [119], Klein [94] [96], Fisher [50].

remained virtually constant since the 1870's. Yet budget studies showed that the saving ratio rose substantially with income level. Since incomes have risen tremendously since the 1870's by almost any standard, this would suggest, according to the absolute income hypothesis, that the aggregate saving ratio should have moved up noticeably over

Increasing time
 B. *Relative Income Hypothesis*. (An answer to this apparent inconsistency is provided by the relative income hypothesis, which seems to have been first propounded by Dorothy Brady and Rose Friedman [14]. Its underlying assumption is that the saving rate depends not on the level of income but on the *relative position* of the individual on the income scale, i.e.:

$$(3) \quad \frac{s}{y} = a + b \frac{y}{\bar{y}}$$

y = current income
 \bar{y} = previous income

where s and y represent individual saving and income, respectively, and \bar{y} represents average income.

Much additional theoretical and empirical support of this hypothesis was provided by the work of Modigliani and of Duesenberry, carried out at about the same time [122] [35]. On a theoretical level, Duesenberry supplied psychological support for this hypothesis, noting that a strong tendency exists in our social system for people to emulate their neighbors and, at the same time, to strive constantly toward a higher standard of living. Hence, once a new, higher standard of living is obtained, as at a cyclical peak, people are reluctant to return to a lower level when incomes go down. In other words, people seek to maintain at least the highest standard of living attained in the past.)

(On the basis of this reasoning, Duesenberry inferred that from an aggregate time-series point of view the relative income hypothesis could be transformed into one expressing the saving rate as a function of the ratio of current income to the highest level previously reached, i.e.:

$$(4) \quad \frac{S}{Y} = a + b \frac{Y}{Y_0} \quad (\text{short run}) \quad a, b \text{ } \left. \begin{array}{l} \text{long run} \\ \text{short run} \end{array} \right\}$$

where Y_0 represents the highest level of income previously attained (after deflation for changes in prices and population).

The implication of this hypothesis is that the saving ratio in the long run is constant, independent of the absolute level of income, although in the short run (from one cycle to another) the rate depends on the ratio of current income to previous peak income.

One variation of this approach has been the suggestion by Davis: that previous peak consumption be substituted for previous peak income [33]. The rationale for this suggestion is that people become ad-

justed to a certain standard of *consumption*, rather than to a certain level of income, so that it is past spending that influences current consumption rather than past income. An additional argument for the substitution of consumption for income is that current income, referring to a period of one year or less, is likely to be less stable and less representative of a family's living standard than is current consumption [164, pp. 280-95].

The empirical support for the relative income hypothesis has proceeded along two lines. One consisted of showing that the aggregate relations of a form similar to (4) provide at least as good explanations and statistical "fits" to fluctuations in national personal saving over time as the various forms of the absolute income hypothesis [33] [35, pp. 89-92] [122, pp. 379-99]. Noteworthy in this respect was the finding of an independent evaluation that these functions yielded greater predictive accuracy outside of the period of observation than did various forms of the absolute income hypothesis [45].¹⁰ In addition, of course, there was the constancy of the aggregate saving ratio over time which fitted in with the relative income hypothesis.)

Second, a number of instances were demonstrated in which the relative income hypothesis was, and the absolute income hypothesis was not, able to explain differences in saving or consumption patterns observed in budget data. Thus, Brady and Friedman by this approach were able to reconcile the higher saving rates of village than city families at the same levels of income in 1935-36, and again in 1941; the similarly higher saving rates of farm families than nonfarm families in 1935-36, and also in 1941; and various geographical differences in saving rates in 1935-36 [14]. Dusenberry used this hypothesis to reconcile the fact that dissaving at a given level of income was less frequent in 1941 than in 1935-36, that Negro families saved more than white families in 1935-36 at the same level of income, as well as to explain geographic differences in saving rates [35, Ch. 4, 5]. Brady showed that family saving varied not only with family income but also with the income level of the community in which it resided [10].

Findings such as these do not necessarily serve to rule out the absolute income hypothesis, and it is still very much of an open question whether the facts do indeed conflict with the absolute income hypothesis or whether the hypothesis has been misinterpreted. A basic tenet of the hypothesis is the *ceteris paribus* assumption for all variables other than (current) income. Yet, data availability in empirical studies has been too restricted to allow other principal relevant variables to be

¹⁰ However, the most accurate predictions of all were obtained when the functions were transformed into first-difference form, and it was then of little consequence which functional form was used.

held constant; and if such variables are indeed not constant, failure of saving, or the saving rate, to fluctuate with income may represent simply the effects of these omitted variables. Thus, Tobin shows that the apparent failure of the absolute income hypothesis to explain Negro-white saving differentials at the same level of income can be reconciled if allowance is made for the smaller financial resources available to Negro families than to white families. Because of this difference in wealth, Negro families are unable to dissave as frequently or as much as white families at the same income level, and therefore require extra financial reserves to tide them over emergencies [154, pp. 145-49].

In a similar manner Tobin shows that wealth differentials may explain geographic differences in saving rates, and even the historical constancy of the saving ratio. The latter is based on the presumption that the substantial growth in asset holdings over time may have reduced the need for saving out of current income and contributed to raising the propensity to consume as real income increased. Admittedly, the evidence is rather sketchy, as is noted by Tobin [154, pp. 154-56] and is stressed by Milton Friedman [56, pp. 173-82]. However, if a variable such as wealth could be shown to have influenced the secular propensity to consume, the absolute income hypothesis could be vindicated.

C. The Permanent Income Hypothesis. (This most recent hypothesis on consumer behavior grew out of the rising concern regarding the adequacy of current income as the most appropriate determinant of consumption expenditures.¹¹ Particularly among nonwage-earner families income receipts vary substantially from period to period, while consumption outlays exhibit much greater stability. This led to the belief that people geared their expenditures to average actual and anticipated income over a number of periods rather than only to income received in the current period.) The central idea is as follows [56, p. 220]:

Consider a large number of men all earning \$100 a week and spending \$100 a week on current consumption. Let them receive their pay once a week, the pay days being staggered, so that one-seventh are paid on Sunday, one-seventh on Monday, and so on. Suppose we collected budget data for a sample of these men for one day chosen at random, defined income as cash receipts on that day, and defined consumption as cash expenditures. One-seventh of the men would be recorded as having an income of \$100, six-sevenths as having an income of zero. It may well be that the men would spend more on pay day than on other days but they would also make expenditures on other days, so we would record the

¹¹ For example, see Margaret Reid [142], Milton Friedman and Simon Kuznets [58].

one-seventh with an income of \$100 as having positive savings, the other six-sevenths as having negative savings. Consumption might appear to rise with income, but, if so, not as much as income, so that the fraction of income saved would rise with income. These results tell us nothing meaningful about consumption behavior; they simply reflect the use of inappropriate concepts of income and consumption. Men do not adapt their cash expenditures on consumption to their cash receipts, and their cash expenditures on consumption may not be a good index of the value of services consumed—in our simple example, consumption expenditures might well be zero on Sunday.

As is often the case with developments of this sort, a theoretical foundation for this hypothesis was developed more or less independently by two different people: by Milton Friedman and by Franco Modigliani, the latter with the collaboration of R. E. Brumberg and Albert Ando. The two versions are similar in principle, though different in certain respects. Whether it is because of its deceptively simpler formulation or because of its more provocative interpretations and assumptions, the Friedman form has gained wider attention. In what follows both forms are presented, with greater emphasis on the Friedman formulation.

✓ The permanent income hypothesis of Friedman may be said to rest on three fundamental tenets. First, a consumer unit's measured (observed) income (y) and consumption (c) in a particular period may be segregated into "transitory" and "permanent" components, i.e.:

$$(5a) \quad y = y_p + y_t \quad \checkmark \quad (1) \text{ ad}$$

$$(5b) \quad c = c_p + c_t \quad \checkmark \quad (2) \text{ ad}$$

Permanent income, say, in a given year, is the product of two factors: the wealth of the consumer unit, estimated as the discounted present value of a stream of future expected receipts, and the rate, r (or weighted average of a set of rates), at which these expected receipts are discounted [57].

The second tenet is that permanent consumption is a multiple, k , of permanent income:

$$(6) \quad c_p = k y_p \quad \checkmark \quad (3)$$

where k depends only on the interest rate, i , the ratio of nonhuman to total (nonhuman plus human) wealth, w , and a catchall variable, u , of which age and tastes are principal components. In other words, $k = f(i, w, u)$, but k is independent of the level of permanent income. It should be noted that consumption here is defined in the physical sense rather than in the monetary sense, i.e., as the physical consumption of goods and services. Durables purchased in a current period

are considered as saving to the extent that they are not used up in that period.

Third, transitory and permanent income are assumed to be uncorrelated, as are transitory and permanent consumption, and transitory consumption and transitory income:

$$(7) \quad r_{y_t y_p} = r_{c_t c_p} = r_{y_t c_t} = 0 \quad \dots \quad (4) \quad \text{fundamental}$$

As a result, a consumer unit is assumed to determine its standard of living on the basis of expected returns from its resources over its lifetime. These returns are expected to be constant from year to year, though in actual practice some fluctuation would result over time with changes in the anticipated amount of capital resources. The expenditures of the consumer unit are set as a constant proportion (k) of this permanent level of income, the value of k varying for consumer units of different types and of different tastes.¹² Actual consumption and actual income deviate from these planned, or permanent, levels to the extent that transitory factors enter in, e.g., a crop failure in the case of farm family income or unexpected medical bills in the case of spending. However, these transitory factors are essentially random and independent of each other, with the primary result of serving to obscure the true underlying relationship between the permanent components of income and of consumption.

[The Modigliani-Brumberg-Ando (MBA) formulation is essentially a "permanent wealth" hypothesis rather than a "permanent income" hypothesis, though in practice the two approaches converge.] In its most recent formulation, the household or consumer unit is assumed to determine "the amount available for consumption over life, which is the sum of the household's net worth at the beginning of the period . . . plus the present value of its non-property income . . . minus present value of planned bequests" [123, p. 78]. The amount allocated to consumption (defined in the same manner as by Friedman) is a certain proportion of these resources. Actual consumption, however, differs from this allocated amount by transitory expenditures and by certain stochastic factors (v), i.e.:

$$(8) \quad c_t = k^* x_t + v_t$$

Thus, this relationship is essentially the same as that derived by Friedman [by substituting (6) into (5b), with k^* in (8) corresponding to the product of r and k]. Note, however, that the variables in equation (8) have time subscripts whereas those of Friedman's do

¹² A very similar formulation is provided by William Hamburger [70]. He postulates total current expenditures of consumers to depend principally on tastes, the interest rate and the discounted value of lifetime resources, the last being determined by the sum of wealth and a multiple of his current wage rate.

not. In the MBA formulation, k^* is assumed to vary explicitly with the age of the consumer unit, as is x , and possibly with other factors, such as family size. In the Friedman formulation, k is a constant for the same consumer unit over time.¹³

The MBA formulation is also more flexible in that the possibility is considered that transitory income and transitory consumption may be related to each other. In that event, Modigliani and Ando show that equation (8) turns into the following form:

$$(9) \quad c_t = f(k'_t, x_t, y_t)$$

so that current income as well as permanent income enter into this relation as determinants of current (observed) consumption. In their empirical work, however, Modigliani and Ando do not seem to have tested this relation.

In either formulation the central tenet is the assumption that the proportion of permanent income saved by a consumer unit in a given period is independent of its income (or its resources) during that period, and furthermore that transitory incomes may have no (Friedman) or little (MBA) effect on current consumption. ✓

✓ Clearly, from an empirical point of view, this is a very difficult hypothesis to test, because of the difficulty of measuring permanent income and permanent consumption. Nevertheless, the permanent income hypothesis is analytically a very rich one and lends itself to a number of significant inferences regarding individual and aggregate behavior.) This is not the place to develop these inferences, particularly since they have been developed elsewhere [56, Ch. 3, 7] [124] [123, esp. pp. 74-109] (However, one theoretical inference of this hypothesis deserves special mention because of its basic importance to the empirical tests. Under the permanent income hypothesis, the slope of the relation between observed consumption and observed income, namely (assuming linearity) b in: $c = a + by$, can be shown to be equivalent to kP_y , where P_y is the ratio of the variance of the permanent component of income to the total variance of income, i.e.:

$$P_y = \frac{\sum (y_p - \bar{y}_p)^2}{\sum (y - \bar{y})^2}$$

Since k is constant, by assumption, this means that fluctuations in the slope of measured income reflect fluctuations in the relative importance of the permanent component of income. Furthermore, R_y is equivalent to the income elasticity of consumption, if the elasticity is estimated at the sample means and if the transitory components of both income and consumption average zero. The significance of this be-

¹³ Although k may vary among consumer units, as noted previously, i.e., $k = f(i, w, u)$.

comes clear when we list the principal empirical results and observations advanced to support the permanent income hypothesis. ✓

✓ 1. From time series aggregates, Friedman notes that the following findings are in accord with the hypothesis [56, Ch. 5]: (a) The marginal propensity to consume is invariably less than the average propensity to consume. (b) The ratio of permanent consumption to permanent income, k , appears to have been constant since at least 1897, after allowance for variability in the observed consumption-income ratio due to transitory factors.¹⁴ (c) The income elasticity of consumption tends to rise as the period of observation to which a consumption function is fitted increases, thus confirming that transitory factors become less important over longer time spans. (d) Marginal propensities estimated from data deflated for price or population changes are less than those estimated from the corresponding undeflated data: permanent components are more important in the latter case because of the general positive correlation among output, prices and population.

2. From cross-section budget data, Friedman notes that [56, Ch. 4]: (a) Despite observed inequality of income distributions on a cross-section basis, long-run trends indicate that the income distribution is becoming, if anything, more equal—thereby suggesting that measured income is not a valid measure of wealth. (b) The average propensity to consume has been relatively constant in budget studies covering ✓ different times and different groups. Furthermore, the stability in the average propensities, and the values of less than unity of the income elasticities, contradict the stability of these cross-section relations—suggesting that the consumption-income ratio declines as income rises, which is inconsistent with the time-series aggregates. (c) Income elasticities are less for the United States than for Great Britain or Sweden, suggesting that transitory factors are more important in the United States, as one might expect. (d) The income elasticity, as well as the marginal propensity and k , are all lower for farm families, and for non-farm and own-business families, than for other nonfarm families, in accord with the hypothesis. (e) Consumption-income regressions for groups of families classified by income change have steeper slopes than the over-all regression: the transitory component is smaller for income-change classes. ✓

✓ 3. Turning to work other than Friedman's, P_y estimated from income data for the same consumer units over time yields consistent results for different groups and different time periods. Such estimates also corre-

¹⁴ The allowance is rather arbitrary—seeing whether most of the annual points fall within 5 percentage points of a line going through the origin of the consumption-income graph and the long-run average of this ratio, .877. On the other hand, as Friedman notes, secular constancy of k is not an integral part of the permanent income hypothesis.

spond with estimated income elasticities from budget data, which also estimate (independently) P_y [143].

4. Classification of families by income change appears to result largely in a manifestation of transitory income, rather than expenditure lags behind changes in permanent income; the consumption-income ratio varies most between years for families with substantial income change [146].

5. The estimated income elasticity for all households exceeds the weighted average of income elasticities for relatively homogeneous groups of households—variation due to transitory factors is less important in the former case [38] [123, pp. 123-66].¹⁵ Furthermore, no systematic association is apparent between mean income and the consumption-income ratio for most criteria; education is a notable exception.

6. Increasing the importance of transitory income by classifying families by current income categories reduces income elasticity estimates—transitory components are more important among these presumably more homogeneous subgroups [37].

7. Groups with the more variable incomes have higher saving ratios [53, pp. 229-63].

8. The effect of age, or life cycle, is supported by the fact that the observed saving ratio is low for young age groups, highest in the later earning stages, and negative or very low in retirement [124]. ✓

✓ Despite these seemingly impressive arguments, the permanent income hypothesis is by no means established. Indeed, the evidence to the contrary seems at least as impressive. This opposing evidence, like the arguments for the theory, covers both theoretical and empirical considerations. On a theoretical plane, question is raised regarding the validity of the two central tenets of the theory, namely, the independence of k of the level of income, and the lack of correlation between transitory consumption and transitory income. Thus, Friend and Kravis note that the permanent income hypothesis implies "that low-income families will have no greater preference for purchase of future goods than will high-income families" [59 p. 538] while Duesenberry makes a similar criticism [36]. Such a concept they find to be seriously deficient on purely deductive grounds because of the very different kinds of pressures and motivations acting on families at different income levels. ✓

In a similar fashion, the assumption of a zero marginal propensity to consume out of transitory income is questioned, partly on the basis that low-income families are under strong pressures to spend any un-

¹⁵ "Relatively homogeneous groups" means households classified by characteristics unrelated to transitory factors, and for which permanent and transitory incomes are uncorrelated. Classifying criteria used were city size, education, occupation, age, tenure.

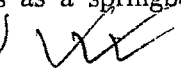
expected income to meet current needs [59, pp. 539-41], and partly because of the very unequal distribution of wealth which mitigates against dissaving by low-income families to maintain consumption in the face of temporary declines in income [156, p. 451].

Criticism of the permanent income hypothesis on empirical grounds has followed two lines. One line has been to note that much of the evidence advanced is either inconclusive or is not inconsistent with other principal hypotheses. Thus, under the absolute income hypothesis one would also expect the marginal propensity to consume to be less than the average propensity, groups with more variable incomes to have higher saving ratios, and consumption-income regressions for groups of families classified by income change to have steeper slopes than the over-all regression. In addition, as was noted previously, Tobin has suggested how the constancy of the long-run propensity to consume might be reconciled with the absolute income hypothesis. Furthermore, the interpretation given by Friedman to many of his test results is not the only possible interpretation and is at times subject to considerable doubt [63] [72] [156], though some of the evidence can apparently be interpreted only in terms of it [143].

From a more direct point of view, various test results have been advanced as contradicting the permanent income hypothesis. Thus, Friend and Kravis show that the same variation in the saving rate occurs when families are classified by constancy of three-year income as by constancy of one-year income, based on recall data obtained in one-time interviews [59, pp. 544-45]. In addition, they show that saving rates of different occupational groups appear to be closely correlated with the average income of these groups [59, p. 546] [60, pp. 272-73].

To test the zero propensity to consume out of transitory income, Bodkin [8] analyzed by correlation methods the extent to which consumption expenditures were made out of unexpected dividends paid in early 1950 out of National Service Life Insurance. This study yielded not only a statistically significant propensity but a propensity to consume out of these dividends much higher than out of regular income.¹⁶ On the other hand, Krein [104A] obtained a low marginal propensity to consume out of restitution payments made by Germany to former citizens in Israel. However, these payments could hardly have been unexpected.

¹⁶ Friedman attempts to reconcile the results with the permanent income hypothesis, on the assumption that these dividend receipts might have been anticipated and/or they created expectations of future dividend receipts, so that this windfall becomes a proxy for permanent income [57A, pp. 191-206]. In view of the circumstances surrounding the payment of these dividends, however, such an assumption is highly questionable. A more likely explanation is one offered by Margaret Reid (unpublished) that the receipts may have stimulated purchase of homes, thereby setting off a long-run program of saving but a short-run program of spending.

Admittedly, these negative findings are themselves subject to question. For example, the reliability and representativeness of budget data collected in a partial wartime period such as 1950 is a matter of doubt [136]. In any event, the permanent income hypothesis is far from proven. However, whether or not the permanent income hypothesis turns out to be valid, there is little doubt that, to quote Tobin, "This is one of those rare contributions of which it can be said that research and thought in its field will not be the same henceforth" [156, p. 447]. Most of all, it has led to widespread recognition of the possible effects of variability in income on consumption patterns and has provided a theoretical basis for measuring these effects as a springboard for a more realistic theory of consumer behavior.¹⁷) 

III. Influence of Variables Other than Income

A number of studies have been undertaken in recent years to ascertain the effect of particular variables entering into the *ceteris paribus* assumption of the consumption, or saving, function. These studies have focused generally on three sets of variables: socio-economic characteristics of the household, particularly age and life cycle; financial characteristics; and attitudes and expectations. Principal work in each of these subareas is reviewed in this section.

Focus on the *ceteris paribus* assumption does not necessarily abstract from the effect of income, for two principal reasons. First, most socio-economic as well as other variables are related to income. Since most of these "*ceteris paribus* studies" are carried out either by cross tabulation or by some multivariate method such as analysis of variance or multiple regression, part of the effect attributed to the particular variable may actually be due to income, particularly when interactions and other nonlinear effects are present. Second, to the extent that the permanent income hypothesis is valid, even holding constant the effect of current income (the only basis on which income data are available) means that these other variables act to some unknown extent as proxies for permanent income, thereby leading to biased estimates of the effect of these other variables. The fact remains, however, that the *ceteris paribus* variables are of interest in their own right, and even biased effects can be useful.

A. Socio-Economic Characteristics

Virtually every budget study presents breakdowns of expenditures and data on such characteristics as age, education, family size, etc.

¹⁷ For an interesting application of the permanent income hypothesis to analyzing consumer behavior, see the study by Jacob Mincer relating labor activity to family income and consumption [121].

However, the isolation of the effects of these variables on total expenditures or on total saving has received relatively little attention until recently. The availability of the Surveys of Consumer Finances and the various BLS consumer expenditures studies, particularly the 1950 study, and the advent of the relative income and permanent income hypotheses have spurred new interest in these variables. As a result of the latter interest, various studies have attempted to derive saving-income ratios for different population groups. One such study, by Harold Watts, ascribes a central role to occupation and education in the determination of expenditures [165]. Watts attempts to explain expenditures on the basis of a person's expected future income, which is related to a "cross-section profile" holding occupation, education, and age constant. Among other things, he finds that, at a given level of income, those with more education expect higher incomes and spend more.

An attempt by James Morgan to isolate the effects of socio-economic factors on the saving ratio [126]—in this study, saving is defined as changes in net worth, including purchases of durable goods—uses residuals from regressions of saving on income to examine the effect of a large number of additional socio-economic variables, partly by further regressions and partly by application of analysis of variance.¹⁸ Among other things, these results show that the self-employed, including farmers, had very different saving patterns from other families, that home owners saved more than renters, that dwellers in open country areas saved more than metropolitan dwellers, and that life cycle was highly relevant to understanding saving patterns.

In the case of family size, considerable attention has been given to the problem of allowing for variations in expenditures due to differences in family size, either by deflating by a family-size variable or by including family size as a separate factor. The principal work in this area has been concerned with converting family size into an equivalent-adult unit basis. This problem goes back many years, and an extensive literature has grown up around it, with more recent emphasis on the incorporation of this adjustment within a multivariate framework (for example [140, Ch. 9] [55]).

Attention has also been given to the effect on saving and spending of owning an unincorporated business. Various studies in recent years have thrown considerable light on the saving habits of unincorporated business families, as well as on aggregate saving trends in this area

¹⁸ Aside from purely statistical considerations, the validity of this methodological procedure depends on whether the absolute income hypothesis or the permanent income hypothesis is correct. If the latter is the case, the procedure is a biased one because, as noted previously, only measured income is then held constant while the effect of permanent income is intermingled with the other socio-economic variables. See Friedman [56, pp. 86ff.].

[60] [101]. Thus, both Klein-Margolis and Friend-Kravis show that such families have much larger than average negative saving at low incomes and much higher than average positive saving at high incomes than other families, and that the same is true of both farm and non-farm entrepreneurs. Friend-Kravis show that the self-employed exhibit much the same consumption pattern as that of other families; though another study by L. R. Klein suggests that the self-employed are more frequently home-owners and tend to spend less for rental costs and more for household operations than families of salaried professionals and officials [99, pp. 331-35]. Klein also shows that the self-employed save more than other families principally because of their business saving; they do not save appreciably more in other forms.

Age and the Life Cycle. Perhaps the main analytical work in recent years relating to socio-economic characteristics has been with age and the life cycle. Although various early budget studies were concerned in part with the influence of age in one or more of these respects, it was primarily the 1935-36 Consumer Purchases Study with its extensive tabulations that served as a springboard for analysis of the influence of the age factor on consumption. In that study, attempts were made to examine variations in income and in consumption not only by different age groups but by different family types, reflecting to a large extent different stages of the family life cycle [158] [159].

The substantial variations observed in income and consumption by age and family composition led to further study of these variables in the postwar years. The initial studies focused primarily on the effects of age or of family composition. Many of these studies were carried out at the Survey Research Center of the University of Michigan, based on data collected in the Survey of Consumer Finances. Using these data, Janet Fisher was able to develop much useful information on the role of the age factor in consumer behavior [50] [51] [52]. These studies provide empirical data on the manner in which income increases from youth to about middle age and then declines thereafter (though with considerable variation by occupation and wealth); on the manner in which liquid assets rise from youth through middle age and decline thereafter; and on the different purchasing patterns of families in different age levels. Especially notable in the last category is the tendency for younger families to be heavy purchasers of durable goods even though they may have to dissave to do so, whereas older families with the necessary assets make relatively few durable goods purchases.¹⁹

¹⁹ Of particular interest from this point of view is the article by Dorothy Brady on the influence of age on saving and spending patterns [11]. More recently, a wealth of descriptive data on the consumption patterns of the aged will be found in the study by Sidney Goldstein [66].

In a very interesting exploratory study of the determinants of saving, Dorothy Brady finds that to a large extent age comparisons of saving rates are confounded with the effects of income changes, so that "the variation among the age groups in expenditures and saving within the current income bracket will accordingly be a reflection of changes in the direction and magnitude of income . . ." [12, p. 193]. Holding income constant, saving is found to increase uniformly as the age of the wife rises. In addition, Brady shows that family saving is influenced not only by socio-economic variables such as age, family size, and occupation, but may also be influenced substantially by the general level of income in the community where the family resides.

These and other results on the effect of family composition on spending and saving have brought into focus the importance of a life-cycle variable, a variable which would reflect the simultaneous influence of a number of different socio-economic characteristics.²⁰ This interest led, among other things, to the convening in 1954 of a conference by Consumer Behavior, Inc., on the life cycle as related to economic, marketing and sociological behavior of consumer units. The volume that grew out of this conference provides a wealth of data on the subject [23], ranging from provocative discussions of the role of age and U.S. culture on consumer purchases (by David Riesman and Howard Roseborough) to the first really thorough empirical study of consumer finances over the life cycle (by John B. Lansing and James N. Morgan). The latter study is particularly noteworthy because it uses as the basis for the analysis a classification of consumer units by stage of life cycle rather than by age alone, as was the case for virtually all of the previous studies. The article demonstrates the analytical values of such a classification and presents empirical data on the manner in which income, spending and assets vary over the life cycle. Related studies in this volume present information on the manner in which purchasing interest and purchasing trends vary by the life cycle, and on the possible impact of the life cycle on advertising [5] [120].

Some studies have also been conducted on the effect of the life cycle on consumer behavior in Great Britain. Thus, Harold Lydall has traced the life-cycle pattern in income receipts, in savings, and in net worth, finding the pattern roughly similar in Great Britain to that in the United States [112].²¹ At the same time, net worth does not appear to decline as much in Great Britain after income has turned down. In addition, a comparative study by Janet Fisher shows that durable-goods purchases were much more prevalent in the United States than

²⁰ Actually, life cycle as a variable had for some time previous been a principal topic in the study of the sociology of the family, and had also been of interest in studying the spending patterns of farm families. For example, see Kirkpatrick [93], Glick [64].

²¹ Although life cycle is the focus of this study, only age is used as a classifying variable.

in Great Britain for the same age groups, and that incomes began to decline at an earlier age in the United States than in Great Britain [52, pp. 33-35].

B. Financial Factors

Income Change. A number of studies of the effects of income-change have been made in the postwar years. The findings of these studies are generally similar, but the interpretation of the findings has differed at times substantially, as noted in the discussion of the permanent income hypothesis. Thus, in several studies based on data collected in the Surveys of Consumer Finances, high saving rates are found to be associated, at the same income level, with recent increases in income while those whose incomes have fallen tend to save less. Dissaving was more common among those whose incomes had either declined or risen substantially than among consumer units with relatively stable incomes. Furthermore, an inverse correlation was found between the purchase of durable goods and saving, consumer units having major outlays for durable goods being much more likely to dissave [82] [83] [87] [98] [126]. Morgan notes that the effect of income change varies with asset ownership: among those with small amounts of liquid assets, saving does not vary so much with income change [96, p. 124].

Similar findings on the effect of income change on spending behavior were obtained by Ruth Mack in analyzing budget data of 600 farm families [114]; and she suggests that the effect of changes in income is likely to differ for different expenditure categories. On the other hand, as noted earlier (p. 30), Margaret Reid shows that the same data can be interpreted as highlighting the importance of transitory income in distorting expenditure-income relationships.

The incorporation of income-change as a variable in multiple regressions explaining household saving rates leads to mixed results. Studies by Klein, Morgan, and Katona indicate that the effects of this variable may interact partly with income expectations and partly with liquid assets [82] [94] [96] [98]. Furthermore, the effect may be asymmetrical, being more pronounced for income decreases than for income increases. Households experiencing income decreases and who expect further decreases appear to save more, at the same level of income, than households experiencing decreases but expecting an upturn in the near future [94, p. 446].

In a unique study of short-run effects of income change upon saving, savings, and expenditures in a relatively isolated New England community, George Brinegar finds that household behavior serves to amplify rather than to dampen the effects of income change upon purchases of goods and services [17] [18]. Thus, following a sharp income

decrease milk purchases first declined, then rose above the earlier level, and finally leveled off. In addition, correlations between payrolls and bank balances indicated greater stability between payrolls and savings-account balances than between payrolls and saving in these accounts, thus providing some support for the Pigouvian analysis of income determination.

(*Wealth*. The relevance of wealth to consumption and saving has been recognized in the theoretical literature for some time. As noted earlier, Pigou [138], as well as Lerner in a different sense [110, pp. 44-49], had stressed the importance of increases in wealth in maintaining full employment by causing the consumption-income schedule to shift to the right. Tobin has suggested that increases in wealth may be responsible for the constancy of the aggregate propensity to save over time. Ackley has ascribed a crucial role to wealth in the determination of the cyclical consumption function [1]. In addition, wealth, it will be recalled, plays a central role in the permanent income hypothesis: In the Friedman formulation the ratio of permanent consumption to permanent income is assumed to rise with increases in the ratio of wealth to income; in the MBA formulation, wealth serves as the basis for estimating permanent income.) However, empirical work has been, and continues to be, hampered by lack of data. This has been particularly true with regard to wealth and individual behavior, since data on liquid assets have been available only since the Second World War.

Although not conclusive, the weight of empirical evidence points to a positive, though erratic, relationship of liquid assets to consumption and saving, at least in the postwar years. Under the much less prosperous prewar conditions it is doubtful whether liquid assets exerted much influence on the consumption-income relationship, at least in the aggregate [26]; on a cross-section basis there do not seem to be any data. In the postwar years, the effect of liquid assets appears to have varied with time. A strong positive relationship with durable goods expenditures existed in the late 1940's and a much weaker effect in the early 1950's [96].

As a general rule, the saving rate for individual households appears to vary inversely with the ratio of liquid assets to income, and the influence of liquid assets on saving tends to diminish as the level of income rises [94] [95, pp. 210-27]. Households with a given amount of liquid assets that experience a decline in income tend to save less than households with the same income decline but with less liquid assets, or than households with the same amount of liquid assets but no income decline.

✓ In his study, Morgan found the liquid-asset effect to interact with income-change, the saving rate increasing with liquid assets for those

experiencing a substantial income increase, and the saving rate varying inversely with liquid-asset holdings among those experiencing substantial income declines [126].

Various students of the problem have suggested that net worth is a more relevant concept than liquid assets [113] [155]. This concept is also much closer to the definition of wealth in the MBA formulation of the permanent income hypothesis, in which wealth plays a basic role. Unfortunately, data on net worth are difficult to collect, and hypotheses based on net worth or on total resources have yet to be subjected to direct examination.

C. Expectations and Intentions-to-Buy

Although the role of expectations in consumer behavior has been discussed in the economic literature for many years, empirical research in this area has been purely a postwar development, and is attributable largely to the activity of one man, George Katona. His interest in economic behavior supplemented by a strong psychological background led him to stress, in the 1940's, the importance of expectations and attitudes in a high-level economy. He noted the importance of studying the factors underlying decision processes in economic behavior as well as the growing discretionary aspects of consumer spending, in the case of which attitudes and expectations might be expected to exert a dominant role [81]. Such factors influence *willingness* to buy, which for spending and saving other than that which is habitual would seem to be about as important as *ability* to buy.²² With the aid of data collected under his supervision in the annual Surveys of Consumer Finances, he has been able to present considerable support for this point of view, showing that durable goods purchases were related to a number of individual attitudes as well as to an index of attitudinal variables [90, pp. 91-106].

On the basis of such analyses, Katona and his associates at the Survey Research Center were able to conclude that "motives, attitudes and expectations often change at about the same time and in the same direction among large groups of consumers. Such changes commonly occur prior to changes in the rate of postponable spending and of saving" [85, p. 67], and hence attitudinal data were valuable for predicting consumer spending and saving behavior. As a result of these studies the Survey of Consumer Finances has been collecting such data every year and using them as a basis for analyzing and also predicting consumer behavior.

Data on intentions-to-buy were also collected in the annual Surveys

²² The main theoretical arguments are presented in Katona's early volume [84, pp. 63-81]. Also, see the study by George Katona and Eva Mueller [88].

of Consumer Finances, as part of the attitudinal section. It soon became evident, however, that not only did these data differ conceptually from that obtained with the other attitudinal questions (representing in effect an *ex ante* expression of consumer purchases) but exhibited at times a marked relationship to actual purchases apart from the attitudinal data. Such relationships were apparent both over time and on a cross-section basis, even though these intentions referred to a year or more ahead [109, pp. 405-40]. In addition, experimentation with the collection of plans-to-buy data on a quarterly basis showed that meaningful quarterly data could be collected and, furthermore, that an even more marked relationship existed between plans to buy reported quarterly and later purchases [43, pp. 42-51] [42].

Considerable additional support for the value of plans-to-buy data has been provided by a project of the National Bureau of Economic Research, under the direction of F. T. Juster, to analyze the value, as a forecasting tool, of buying plans as reported by Consumers Union subscribers. Although Consumers Union subscribers are not typical of the total population, and although buying plans were collected on an annual basis, year-to-year changes in buying plans for selected major durable goods were found to foreshadow closely corresponding changes in actual purchases for the postwar years [77] [78]. In addition, these studies indicated that plans-to-buy data made a net contribution to predictive accuracy even after income was taken into account [76].

Partly as a result of these findings and partly because of the inter-correlation between plans to buy and attitudinal variables, a lively controversy has arisen regarding the relative superiority of these two types of data for forecasting purchases. Katona and some of his associates at Michigan maintain that attitudinal data provide insight into underlying motives and buying forces apart from socio-economic factors (age, income, wealth, etc.), and that such information can help improve forecasts. Others feel that plans-to-buy, though perhaps not as fundamental in a psychological sense, is the relevant overt variable for forecasting purposes, and that once such data have been taken into account, no net additional contribution can be expected from information on expectations or attitudes.²³

To date, the empirical tests provide strong evidence in favor of the second hypothesis. After reviewing the evidence then available, the Federal Reserve Consultant Committee on Consumer Survey Statistics under the chairmanship of Arthur Smithies concluded, in 1955, that "buying intentions, properly interpreted, appear to have predictive value. . . . Other attitudes are highly correlated with buying intentions, both over time and as among spending units, and there is so far no con-

²³ An excellent source for recent arguments and evidence pro and con is [162].

vincing evidence that they make an independent contribution to ability to predict . . ." [160, pp. 137-38]. Klein and Lansing found plans-to-buy to help significantly in multiple regressions discriminating between buyers and nonbuyers of durable goods—in addition to age, income, and marital status—while other attitudinal variables were either not effective or much less effective [100, pp. 115-26]. In a fundamental test, Tobin showed by regression analysis that plans-to-buy, in addition to socio-economic variables, made an appreciable net contribution to explaining durable goods purchases whereas this was not true of an attitudinal index; and, when combined in the same equation, plans-to-buy was significant, but not the attitudinal index [157]. Similar results were obtained by Okun [133].

Eva Mueller, though espousing the other side, shows that buying intentions but not an attitudinal index contribute significantly to multiple regressions explaining major durable-goods purchases [130]. The only evidence to the contrary presented so far is also in this study, which shows that an attitudinal index contributes more than buying plans, or than the same index including buying plans, to explaining aggregate semi-annual fluctuations in durable goods expenditures from 1952 to 1957. However, this test is not as comprehensive as Tobin's, including only income as an independent variable and making no allowance for heteroscedasticity.

The findings regarding the value of buying intentions as a predictive tool have been impressive enough that such data are now collected on a continuing, short-run basis. Consumer spending plans for major durables and other large expenditures have been collected bimonthly by telephone by the National Industrial Conference Board since 1958 [27], while the Federal Reserve Board in conjunction with the U. S. Bureau of the Census has been collecting quarterly buying intentions data on a much more comprehensive basis since 1959 [167].

Attitudinal data have not been ignored. Indeed virtually everybody is agreed that "the primary reason for collecting data on psychological factors influencing behavior is to improve the diagnosis of the prevailing situation" [79, p. 455]. Many of the studies reviewed here, particularly those of Katona and Mueller, have shown how expectations and attitudes are related to buying plans and to economic events, and have thrown light on their nature and characteristics.²⁴

III. *Determinants of Asset Holdings*

The growing stock of consumer assets has led to investigation not only of the influence of assets on saving behavior but also on the fac-

²⁴ In the former respect, see in addition to the previously cited publications, Katona [86] and Calla Van Syckle [163]. In the latter connection, see Ferber [44] and Katona [80].

tors associated with holding particular assets. With these more recent studies, the focus shifts from flows out of income to the investment decisions of the household and to explaining differences in the total stock of assets and their distribution among households and over time.

Reasons for holding particular types of assets have been discussed in the theoretical literature for some time [e.g., 92, Ch. 16]. More recently, Katona has attempted to merge these reasons with motivational and other psychological factors as a basis for empirical study [84, pp. 98-107].

Empirical studies are, as yet, relatively few. In a comprehensive study of the factors influencing the composition of the "capital account" of the household (essentially financial assets, durables, business capital), Watts and Tobin concluded that "households tend to maintain some sort of balance in their capital accounts both between assets yielding direct service and financial assets, and between liquid funds and liabilities" [166, p. 48]. Ownership of different assets was positively correlated, while assets and debts were negatively correlated: apparently as households moved up the economic status scale, more of all kinds of assets were acquired and debt was reduced.

By means of a series of multiple regressions on the 1950 Consumer Expenditures data, Watts and Tobin find the composition of particular portfolios to be influenced by a number of "fundamental but unobserved measures of social, economic, and biological, and environmental characteristics" [166, p. 48]. In particular, households headed by people with more education tended to have larger stocks of assets and lower debt, with income and other relevant variables held constant. Older households had less invested in durables and less debt as well. Occupational differences are pronounced, though erratic. Larger families generally had more in durables and less cash than other households. Regional and city-size differences were also apparent. Higher-income households had more in financial assets and less in durables.

Despite the large number of significant relationships, however, in most instances less than 10 per cent of the variation in the dependent variable was explained.

In a study of factors influencing the holding of liquid assets by British households, Lydall finds total wealth (measured as net worth) rather than income level to be the primary determinant of such holdings [113].²⁵ Applying multiple regressions to data from the Surveys of Consumer Finances, Harold Guthrie shows that liquid assets relative to income tend to rise with age and fall as the size of the consumer

²⁵ It is not clear, however, to what extent this finding is affected by the fact that liquid assets averaged over-all about one-fourth of net worth, but over 100 per cent in the lower net-worth classes.

unit increases. In addition, the liquid-assets ratio is higher for those who appear to have permanently depressed incomes and is less for those anticipating income increases [67].

Two other U. S. studies, by Butters *et al.* and Claycamp, found that the proportion of total assets held in liquid form declined substantially as wealth increased [19, pp. 299-316] [25]. The proportion of assets in liquid form also declined with income level, but a multiple regression study including both income and total assets indicated, as in the case of Lydall's study, that wealth was by far the dominant factor [25, Ch. 4].

Using data from the Consumer Savings Project,²⁶ Claycamp applied multiple regression analysis to test the relevance of a wide range of socio-economic and psychological variables to the proportion of total financial assets held in variable-dollar form, that is, assets whose value fluctuates with changes in prices (common stocks, marketable bonds, real estate, etc.). Age, home ownership, total assets, and occupation were significantly related to various forms of this variable-dollar ratio. Attitudinal variables, such as price expectations and other economic expectations, were not significant.

A major part of Claycamp's work was the investigation of the apparent lack of substitution between different types of assets. Such a lack of substitution had been noted by Guthrie between liquid assets and equity in homes; and he had suggested that "consumers do not shift between asset forms while maintaining some normative level of security in total wealth" [67, p. 478]. Tobin and Watts had also advanced the same idea with their hypothesis that consumers, in the handling of their capital accounts, attempted to balance assets and debts against each other [166]; while in a more recent study Phillip Cagan found an absence of substitution between pension contributions and other savings [20].

Claycamp's investigation of the frequency of different asset holdings provided strong support for this phenomenon, extending it to different combinations of 13 assets and debts, two or more at a time, using ownership frequencies and dollar amounts in turn. The results led to the so-called "independence hypothesis," namely, that "there is no significant difference between the actual proportion . . . owning a combination of holdings and the expected proportion which is found by multiplying each of the proportions in the combination" [25, p. 1]. Confirmation of this hypothesis would have major implications for economic analysis.

Various studies have been made by Kreinin with Survey Research

²⁶ Sponsored by the Inter-University Committee for Research on Consumer Behavior with financial assistance from the Ford Foundation and the U.S. Department of Agriculture.

Center data of the factors influencing ownership of specific assets, notably, liquid assets, life insurance, and common stock [102] [103] [104]. In these studies, which were carried out by analysis of variance, a number of socio-economic factors were found to be associated with ownership of these assets, particularly income and occupation. In the case of liquid assets, age and region were also significant; while education and liquid assets appeared to influence stock ownership. In the latter case, an optimistic outlook and willingness to take risk also showed some relationship to the dependent variable. In all of these studies, however, price expectations were not significantly related to the dependent variable, though other attitudinal variables were significant.²⁷

IV. Determinants of Specific Expenditures

Two different lines of approach have been used to ascertain the factors influencing the consumption of specific consumer products, reflecting the conceptual equality between purchases of goods by consumers and sales of these goods by retailers or manufacturers. One approach has attempted to explain static differences in product purchases of different households in terms of household characteristics, largely to the exclusion of prices and other market variables; while the other approach has attempted to explain temporal differences in aggregate sales in terms of market variables, largely to the exclusion of household characteristics (though aggregate income does appear in such functions).

Paralleling the consumption function, the first approach has been characterized by the search for so-called Engel curves—relationships between specific expenditures (or forms of saving) and income level, holding other relevant variables constant. The second general approach has utilized sales data and related information from industry sources. This approach has necessarily had to be aggregative in nature and, for this reason, has generally focused on the derivation of time-series relationships; it is exemplified by the search for demand curves, to ascertain how sales fluctuate in response to changes in price, holding other relevant factors constant.

²⁷ Unfortunately, the method used in these studies is subject to serious question. In each case, the analysis of variance was carried out by treating the cell means as the unit of observation rather than the individual consumer unit. Since the cell sizes in consumer surveys are decidedly unequal, such a procedure is an immense time saver. However, the procedure is also likely to distort seriously the significance of different factors, particularly of interaction effects, since the variance among the cell means is treated as equivalent to the random sampling variance. Some experimental computations made by the writer indicate that such an assumption is clearly unjustified, and that the use of the individual consumer unit as the unit of observation is likely to produce very different results, especially bringing out unexpected significant variables and interaction effects.

Empirical work on both approaches had its beginning about the mid-nineteenth century, with the work of Engel on household budgets and, some time later, with the work of a number of U. S. and British statisticians on demand relationships.²⁸ Since then empirical studies in both areas have multiplied enormously, spurred by the growing interest in statistical methods (and the ease with which a demand study can be used as the basis for a thesis). With both approaches, the past two decades have witnessed numerous empirical studies of specific commodities—and, more recently, of services—which have added considerably to knowledge of the effect of different variables on purchases, or sales. At the same time, this period has witnessed a growing emphasis on methodological improvements, and it is here that the principal developments in this area have taken place. For this reason, the present review is relatively brief and, in view of the orientation of this paper, focuses primarily on the use of household budget data.

In the area of demand analysis, considerable progress has been made in the specification and estimation of relationships. Recognition that price and possibly other relevant variables are not always independent of quantity led to more careful specification of demand relationships and to the development of more appropriate methods of estimation. Interdependence was taken into account by the equation-systems approach, using limited-information or reduced-form methods of estimation [e.g., 152]. For situations where the interdependence was not instantaneous, the simpler recursive method of estimation was developed and has been shown to yield highly effective results [170]. Although least squares is still probably the most widely used method of estimating the parameters of demand functions, in many instances justifiably so, and the controversy on the relative efficiency of the different estimation methods is by no means settled [e.g., 22], a wide variety of effective estimation procedures are currently available. (Perhaps the most recent innovation is the use of both income and total expenditures as instrumental variables in deriving Engel Curves [111A].)

Considerable progress has also been made in specifying the *ceteris paribus* of demand functions. A major innovation has been the introduction, and the significance revealed, of quality as a determining variable [15, pp. 36-46] [149, pp. 388-89]. Another innovation has been the attempt to allow discontinuity in reaction to changes in income and prices. One such attempt is exemplified by the "ratchet effect" of Modigliani and Duesenberry, according to which people continually adjust upward their living standards in response to peak standards attained in the past. A somewhat different approach has been that of Farrell, who

²⁸ For a brief description of these early studies, see G. J. Stigler [148].

allows for the possibility that demand relationships may be irreversible over time, that responses to a given change may depend not only on the amount of the change but also on the direction of change [39].

Further realism has been added through the use of lagged reactions, which have been shown to aid considerably in explaining fluctuations in demand [21, pp. 49-74] [151]. Distributed lags, and the so-called quasi-accelerator (in which demand is assumed to depend upon the rate of increase, as well as upon the prevailing level, of income), have also been introduced successfully in demand analysis [132].²⁹

Attempts have been made to derive demand functions not only for a single commodity at a time but for a large range of commodities. This technique has been used by the U. S. Department of Commerce as well as by Richard Stone in explaining fluctuations in consumer demand [137] [149]. Unfortunately, the use of a standardized equation for a wide range of commodities serves to place the demand function essentially in a statistical straitjacket, and at least one experimental study suggests that biased estimates of income elasticities may result [46, pp. 410-13].

Turning to the use of household-budget data, Engel's "Law"—that the proportion of household expenditure on food declines as household income rises—has by now been verified literally hundreds of times.³⁰ Generally, most studies also provide strong support for what is known as Schwabe's Law, namely, that the per cent of income spent for housing declines as income rises, although using permanent income concepts Margaret Reid alleges that high-quality housing in reality is one of the main luxuries of consumers [142] [144]. Further support for both laws was obtained in a study by Houthakker in which he derived Engel curves for 4 expenditure groups based on data from each of 40 surveys from 17 countries [73]. It is interesting that the function used in this study, as in many others, was essentially the same as used by Engel in his original paper, namely, a log-log relationship between the specific expenditure and total expenditures.

Recent studies reflect a growing interest in ascertaining the determinants not only of food expenditures but of a wide range of household purchases, such as housing, clothing, house furnishings, and services.³¹

²⁹ A general description of these and other innovations in demand analysis will be found in the recently published book by Robert Ferber and P. J. Verdoorn [49, Ch. 8, 9].

³⁰ For a partial list of studies, see the bibliography by James N. Morgan [127]. There has also been an abortive tendency to mangle the principle by refuting its applicability with time-series data, something that would make Engel turn over in his grave.

³¹ On clothing, see Dorothy S. Brady [13] and Morris Hamburg [68]; on house furnishings, see Vernon Lippitt [111]; on services, see Robert Ferber [47]; on housing see Sherman Maisel and Louis Winnick [116].

These studies show that these consumer purchases are influenced by a wide variety of socio-economic characteristics; but, nevertheless, the proportion of variance in individual household purchases explained by these numerous factors is small, often the order of .3 or less. In addition, these studies tend to bear out earlier findings on income elasticity, yielding low elasticities for food and housing, elasticities close to unity for clothing and education, and higher elasticities for various types of recreation, personal care, home operation, and other services.³²

Special attention has been given to the relationship between durable-goods expenditures, financial saving, and other variables; and strong evidence now exists that to a large extent purchase of durables is a substitute for financial saving [62A] [97] [118]. All of these studies find purchase of durable goods related to a variety of socio-economic characteristics, particularly age, income change, size of consumer unit, and various expectations. Studying the characteristics of a host of such purchases combined into "consumer investment" expenditures (purchases of cars, other durables, household equipment, and additions and repairs to houses), Morgan finds this category to have constituted a relatively constant proportion (between 12 and 16 per cent) of disposable income at all income levels, except the lowest and the highest, during each of the postwar years, 1947-56 [128].³³ Such expenditures are found to be influenced, as in other studies, by a variety of demographic and attitudinal variables, and are found to be sticky downward and flexible upward with respect to changes in income.

As in the area of demand analysis, linear (in some cases, logarithmic) single-equation forms have been used to derive from the same data marginal propensities and income elasticities for a wide range of consumption categories. This was the approach used by Prais and Houthakker on English data, and by Crockett and Friend on American data [32] [140]. The Friend-Crockett study analyzes by multiple regression analysis the effects on all major consumption categories of a large number of family characteristics including income. Among other things, their results indicate that family size and age, next to income, appear to exert the main influence on family consumption, particularly through the influence of family size on food expenditures and of age on durable goods purchases. The study also finds that income elasticities are reduced substantially once variables reflecting other family characteristics are introduced into the relationships.³⁴

³² For a summary of these earlier studies, see the review article by Ruth P. Mack [115].

³³ Morgan suggests that this proportion might have been constant at the highest income level too, if purchases of such items as summer homes, motor boats, and fur coats had been included.

³⁴ A basic question underlying many of these studies is whether they do provide

At the same time, dissatisfaction has been expressed over the rigid assumptions inherent in this approach. This dissatisfaction was crystallized to some extent by the findings of Prais and Houthakker that a semilogarithmic form is preferable for necessities and a log-log form is preferable for luxuries [140, pp. 87-103]; and by Stuvell and James that the use of only one form of equation to explain variations in food expenditures over the entire range of incomes and social classes is unsatisfactory [150].

One result of this dissatisfaction has been some interesting attempts to modify the Engel-curve approach. One approach has been to introduce nonlinearities into the expenditure-income relationship to allow for the possibility that a commodity may behave as a luxury in one range of income and as a necessity in a different range [139]. A Sigmoid response curve, which has an upper asymptote and at the same time passes through the origin, appears to yield realistic results in such instances [2].

Another approach, one that uses linear equations, has been to explain consumer purchases of specific goods on the basis of relationships between stocks and wealth rather than between income and expenditure. Quasi-Engel curves relating inventories to a measure of wealth have been derived by Cramer for a wide variety of household goods based on two Dutch surveys [29], and by Houthakker and Haldi for automobiles based on panel data for U. S. families [74]. The latter study is particularly interesting, showing that at a given level of income gross investment in automobiles varies inversely with beginning-of-the-year inventory, and that at a given level of beginning inventories, gross investment rises with income level.³⁵

Dissatisfaction with the linear-equation approach has also led to the use of variance analysis rather than multiple regression to ascertain the net effect of different variables on household expenditures. Variance analysis offers a more flexible approach to the estimation of relationships, since no assumption is necessary regarding the form of the functional relationship. As a result, studies using this technique do not

reasonably accurate estimates of the income effect on particular expenditures. To the extent that the permanent income hypothesis is correct, income effects estimated by relating current expenditures to current income can be understated substantially. Thus, in the case of housing, Margaret Reid obtains income elasticities of close to 2 by using average incomes for groups instead of data for individual households [144]. On the other hand, as noted earlier, Friend and Kravis obtained much the same income elasticities using 3-year averages of household income as from 1-year figures [59].

³⁵ It might be noted that a somewhat similar approach was used by Hans Brems on time-series data to predict the long-run equilibrium demand for automobiles based on a model relating stock of automobiles to the equilibrium rate of growth and the average age at which cars are scrapped [16]. An extension of this model, incorporating time lags, has been presented by Marc Nerlove [131].

always give the clear-cut simple results yielded by multiple regression, but in many ways appear to be more realistic, bringing out effects of various characteristics not only singly but in combination with each other (e.g., [31] [47] [111]). Unfortunately, as noted previously, several of these studies have utilized group averages rather than individual families as the unit of observation, thereby greatly reducing the chances of detecting interaction effects.

Another postwar development has been emphasis on obtaining and analyzing the expenditure and saving behavior of the same households over time. Popular for many years in marketing and advertising circles, the value of the consumer panel technique to economic analysis, and as a connecting link between time series aggregates and cross-section budget surveys, has only recently been recognized, stimulated in part by the emphasis of the permanent income hypothesis on the life history of the household. Panel studies undertaken so far have clearly demonstrated their value. In addition to studies discussed earlier [43] [87]³⁶ Houthakker and Haldi, in their automobile investment study, which was based on panel data, were able to isolate family taste as a separate variable. In another study based on panel data, Jean Crockett showed that income elasticities based on continuous panel data were much closer to time-series elasticities than the usual cross-section elasticities [31].

The introduction of panel data in budget studies highlights the growing interest in recent years in integrating the techniques of demand analysis and of household budget analysis. Time-series aggregates have serious disadvantages because of the frequently unstable estimates of income and of demand elasticities obtained as a result of the high correlation between income and prices. On the other hand, cross-section data are essentially static and are difficult to use as a basis for prediction. Hence, a combination of the two types of data would seem to offer a much more powerful technique for understanding consumer behavior.

Initial efforts made to integrate these two sets of data have been directed toward deriving independent estimates of income elasticities from budget data, inserting these estimates into an aggregate time-series demand relation, and estimating the parameters of the other variables from the time-series data [40] [153] [149, esp. Ch. 18]. An alternate approach has been to search for cross-section functions that might be expected to remain stable over time. This approach was used by Eleanor Snyder in a study finding a cross-section consumption relationship for food to yield essentially the same estimates of the parameters when applied to eight different cross-section studies between 1888

³⁶ Another study still being analyzed is a food purchase panel operated by Michigan State University. See G. G. Quackenbush [141].

and 1950 [147]. A more elaborate variation of this same general approach is the Crockett-Friend attempt to derive a complete set of consumer demand relationships [32]. Derivation of stable relationships of this sort could be used for prediction *if* distributional changes in these variables could be anticipated and *if* stability were assured.

This general approach has been carried one step further by Vernon Lippitt [111]. He applied analysis of variance to measure the effect of relevant cross-section variables on the particular item of expenditure. Estimates of the aggregate effects of these variables were derived for years for which the necessary cross-section data were available; estimates for intervening years were obtained by interpolation. These aggregate effects were then incorporated into a time-series function relating expenditures to these variables as well as to other pertinent time-series variables. Although details of the procedure may be questioned, and although this procedure still requires an independent estimate of distributional effects for predictive purposes, Lippitt demonstrates convincingly that this procedure is practicable and, in particular, that the distributional effect exerts a pronounced influence on estimated expenditures.

V. Household Decision-Making

The household can be viewed as a decision-making organization engaged in much the same activities as is a business firm. From this perspective, the household becomes a separate organization that receives income and other money receipts and that dispenses this money in accordance with certain criteria. Entering into these criteria are the wants and desires of different household members, the structure of the household and the interpersonal relationships existing among the different family members, all subject to various economic restraints. The explanation of consumer behavior then becomes a matter of identifying and measuring the relative importance of the factors that enter into the decision processes.

To borrow an analogy advanced by March and Simon in organization theory [117, pp. 178-82], the decision process can be subdivided into three distinct stages: (1) the manner in which the possibility of a particular action, e.g., purchase, comes to the attention of the household; (2) specification of, and deliberation among, alternative forms of action; and (3) the actual choice.

To illustrate, before a car is purchased, its desirability must first somehow come to the attention of the household. Then, different types of cars (brands, body-styles, etc.) as well as different forms (cash vs. borrowing) and times of making the purchase must be specified, however implicitly, and a certain amount of deliberation among these alter-

natives must take place. Finally, one alternative is selected as best and the decision is made to purchase (or not to purchase).

The usual consumer surveys and budget studies reflect the last stage of this process, namely, decisions in the form of actual purchases. Past empirical research on household behavior, as reviewed in the preceding sections, has been concerned with the measurement of these purchases and with the extent to which they appear to have been influenced by socio-economic characteristics of the household and, to a lesser extent, by its attitudes and expectations. In the latter sense, empirical research may be said to be reaching back into the second stage of the decision process. Nevertheless, from the point of view of decision theory, such results are of limited interest because no light is thrown on the dynamics of the decision process and, clearly, no knowledge is provided about decisions that were *not* consummated as purchases.

In recent years, an increasing amount of activity has focused on the second stage of the decision process, particularly on the extent of deliberation entering into consumer purchases. Thus, the previously cited works by Juster, Ferber, and Katona and his associates serve to reinforce the notion that many durable-goods purchases are planned and thought out carefully in advance. Particularly interesting in this respect is a study by Katona and Mueller on the extent of deliberation entering into purchase decisions of four major household durables (TV, refrigerator, washing machine, and stove) [89]. This study found considerable variation in the extent of advance deliberation among households. The actions of only about one-fourth of the group appeared to conform with the idea of the economic man, who considers a purchase very carefully and investigates numerous possibilities before making a final decision. An almost equal proportion were found to have made these purchases with virtually no advance deliberation, largely as a result of some fortuitous event. Extent of deliberation was more frequent among those with higher education, higher income, older people, and those in professional occupations, as well as among people expressing a liking for shopping. Deliberation was less frequent when the product was inexpensive relative to the buyer's income, when a special deal was offered, or when the product was needed urgently (as when the currently owned model broke down). Families under some financial stress did not appear to consider alternatives any more thoroughly than other families.

Attempts have also been made to explain the decision process in terms of accumulation of desires for and against making a particular purchase, based on the approach to social psychology of Kurt Lewin. This approach has been used by Warren Bilkey on consumer panels to obtain periodic measures from the same families of the psychic tensions

arising at various stages of the purchase decision. Intensity of desire for and against a particular purchase is measured in terms of positive and negative "valences" registered by the household; the more the excess of positive valences over negative valences, the closer is the decision to action [6] [7].

More recently, this theory has been extended into a general model of household buying-decisions by Joseph Clawson, who represents such decisions as the quantitative interplay of different motivations, status dimensions and intensities [24]. Except for isolated experiments, no general application has yet been made of such a model. Indeed, it remains to be shown that such an approach adds anything more to the explanation of the decision process than could be obtained from more straightforward data on buying intentions, attitudes and preferences.³⁷

Very little empirical work has been carried out on the attention-directing stage of the purchase process. This is not surprising in view of the more ephemeral nature of the problem. However, two interesting studies can be mentioned. One study, by Eva Mueller, attempts to ascertain the role of innovation in household purchases [129]. Among other things, it finds that innovators, defined as those who are among the first to purchase new types of appliances, are scattered throughout the population but, as a rule, are generally found among the young, among the well-educated, among married couples with children, and among those who are financially optimistic. People who already own similar appliances are more likely to be attracted to the new products, though this may reflect the interaction effect of assets and incomes.

The other study, carried out from a sociological point of view, traces how people through interpersonal contact become interested in purchasing air conditioners [168]. Based on block observations, this article shows rather strikingly how air conditioner purchases spread by means of neighborhood communication—among neighbors on the same block, over back alleys and over fences. The study suggests that this pattern of communication, particularly if catalyzed by the presence of a "leader," accounts for differences in ownership rates of air conditioners among blocks of the same socio-economic status. In addition, the study stresses the importance of the group in motivating people to purchase new products, inferring that "it is the group that determines when a luxury becomes a necessity" [168, p. 117].³⁸ Other sociological studies have also affirmed the importance of the group, and of leaders, in influencing purchase behavior [9] [91, pp. 234-47].

³⁷ The little work that has been done on the subject indicates that preferences may be very similar to purchase intentions, and that preferences are related to later purchases, at least as far as brand selection is concerned. See Seymour Banks [4].

³⁸ Much the same conclusion on the importance of community effects is reached by Dorothy Brady using an economic approach [10] [12].

VI. *Directions for Future Research*

The review of empirical work on decision processes of consumers in the preceding section is brief only partly because of the survey nature of this article. That empirical work in this area is only just beginning is highlighted by recent publication of a symposium volume on household decision-making which reflects in many ways a good picture of current thinking [54]. The bulk of this volume is devoted to exposition of theoretical approaches to various types of household decisions, ranging from changes in family composition and career choices to saving versus borrowing, and the allocation of expenditures. Empirical results, however, are meager and, with the exception of relationships between buying intentions and purchases presented by Juster, are largely inconclusive. As is evident from this volume, workable models of consumer purchase decisions have yet to be developed.

There is little doubt that empirical work in this area will be greatly expanded in the future, partly for its own sake and partly because of the stimulus provided by simulation and by game theory. Thus, before realistic simulation models of the consumer sector can be obtained, as is being attempted by Guy Orcutt and his associates at Wisconsin, knowledge must be available of the manner in which consumers make decisions and of the factors that enter into these decisions [134]. In a somewhat similar fashion, game theory has led to attempts to reduce consumer decisions to basic elements and to reproduce these decisions under laboratory conditions. Experimental work along this line by Wroe Alderson and his associates tends to support the feasibility of such an approach [3].

Among other things, this review serves to highlight the need for reconciling the different theories of the consumption function. In addition, much greater attention may be expected to the effect on spending and saving of the variables entering into the *ceteris paribus* assumption of the consumption function, particularly to nonlinear and irregular effects. Primary attention may be expected to be given to the role of assets, both their effect on the consumption function and as constituting a separate study area in itself. With asset ownership expanding tremendously year by year, even in recession, it would not be surprising to see a body of literature spring up on the study of "asset functions" to take its place alongside the study of the consumption function and the saving function.

Another area that can be expected to receive even more attention is the role of intentions, expectations, and attitudes on consumer behavior. In the past, these variables have been tested almost exclusively on their ability to predict durable goods purchases. However, there is no reason why modifications of these variables might not be equally

effective in predicting other types of purchases and even, as suggested by a recent exploratory study, in predicting saving [75].

The integration of cross-section with time-series data in explaining consumer demand is yet another area where significant advances can be expected in coming years. The means for such integration has been available for some time, namely, through the use of continuous consumer panels. By keeping continuous records, a comprehensive picture can be obtained not only of the factors influencing a household's purchasing and saving behavior but also of the manner in which decisions are made. Furthermore, this technique enables comparable cross-section distributions to be formed at different points of time and the joint distribution of these cross-sections to be studied over time. In addition, if the geographic scope of the panel operation coincides with an area that serves as a basis for aggregate statistics on incomes and expenditures, a basis is obtained for comparing and combining the data from these two very different sources.

Still another area where major expansion may be expected, and which has been the subject of relatively little empirical work in the past, is the study of the effect of household behavior on other sectors of the economy. The postwar experience has brought out rather dramatically that in a high-income economy consumers are no longer a passive force in business fluctuations, but constitute an autonomous force of their own. Thus, several of the recessions during the 1950's were mitigated considerably by the maintenance of consumer expenditures while activity in other sectors was turning down. Furthermore, the experience of more recent recessions suggests that one of the basic tenets of consumer behavior in the business cycle may be violated, namely, the positive relationship between the saving rate and economic activity. At least in a moderate recession, it appears that consumers may be treating various categories of expenditure rather than saving as residual variables [48]. Whether this is because of an overriding desire for security, or because debts accumulated during prosperity years are being paid off during recession, or for other reasons, remains to be established.

The final area in which much additional work can be expected is one which underlies all other areas of household behavior, and which should have received primary attention long ago, namely, the measurement problem. Consumer surveys and budget studies have multiplied enormously during the postwar period, both in this country and elsewhere.³⁹ These studies have been conducted in much the same manner as earlier ones and undoubtedly contain much the same errors.⁴⁰ These

³⁹ For a description of some of these studies see Jean M. Due [34]; also Eleanor Snyder [147], and the bibliography by James Morgan [127].

⁴⁰ A striking case in point is the new series of expenditure surveys of the U. S.

errors are not small. The few studies that have been made appear to indicate that, more than almost any type of economic statistics, data obtained from consumer surveys or budget studies are subject to substantial errors. As a rule, expenditures tend to be understated somewhat (some substantially, such as tobacco and liquor), income tends to be understated more, and saving tends to be understated most of all [107, pp. 113-50] [123, pp. 51-72]. Such errors are not uniform among different households or among population groups, though little basis exists for evaluation of their magnitude or effects; their influence on estimates of expenditures for population groups is essentially an unknown quantity. Above all, it is clear that past estimates of saving, whether obtained as a residual between income and expenditures or directly, are seriously in error, as are undoubtedly estimates of the distribution of assets and debts among the population [61].

Only one large-scale methodological study of data collection techniques has been undertaken in recent years, on means of improving the accuracy of savings data, under the sponsorship of the Inter-University Committee for Research on Consumer Behavior with financial assistance from the Ford Foundation and the U. S. Department of Agriculture. Initial publications of the study bring out clearly the substantial magnitude of the error problem, suggesting that biases in past surveys affect not only averages but distributions, and that the biases are large enough to render virtually meaningless the usual measures of sampling variation [108].

Under the circumstances, it is amazing how little attention is being given to the improvement of data collection techniques, and how much empirical analysis is focused on attempting to explain what may be no more than errors of observation.⁴¹ Occasional studies of different aspects of the problem have been made, principally by the Survey Research Center, the Federal Reserve Board, and other government agencies, but except for the project mentioned above, no concentrated effort has been made to deal with this problem or to develop new approaches to it. It is in the improvement of data collection techniques that perhaps the greatest strides of all are yet to be made. The sooner such strides are taken, the sooner a really firm basis will be reached for the analysis of household behavior.

Bureau of Labor Statistics. Originally, these surveys were to be preceded by methodological studies, but because of budget limitations these studies were eliminated although they had been begun. As a result, data are being collected in the same manner as in the past, and with the same unknown errors.

⁴¹ Thus, see comments by Margaret Reid [145]. Many of the findings of empirical studies reported at the *Conference on Consumption and Saving*, some of which were heatedly discussed, could have been due to errors of observation.

REFERENCES

1. GARDNER ACKLEY, "The Wealth-Saving Relationship," *Jour. Pol. Econ.*, Apr. 1951, 59, 154-61.
2. J. AITCHISON AND J. A. C. BROWN, "A Synthesis of Engel Curve Theory," *Rev. Econ. Stud.*, 1954-55, 22 (1), 35-46.
3. WROE ALDERSON, Comments on "Decision-Making Regarding Allocation and Spending," in [54, pp. 184-85].
4. SEYMOUR BANKS, "The Relationship Between Preference and Purchase of Brands," *Jour. Marketing*, Oct. 1950, 15, 145-57.
5. S. G. BARTON, "The Life Cycle and Buying Patterns," in L. H. Clark, ed., *The Life Cycle and Consumer Behavior*, New York 1955, pp. 53-57.
6. W. J. BILKEY, "A Psychological Approach to Consumer Behavior Analysis," *Jour. Marketing*, July 1953, 18, 18-25.
7. —, "Consistency Test of Psychic Tension Rating Involved in Consumer Purchasing Behavior," *Jour. Soc. Psych.*, Feb. 1957, 45, 81-91.
8. RONALD BODKIN, "Windfall Income and Consumption," [62, pp. 175-87].
9. F. S. BOURNE, "Group Influences in Marketing and Public Relations," in Rensis Likert and S. P. Hayes, ed., *Some Applications of Behavioral Research*, UNESCO, New York 1957, pp. 205-57.
10. D. S. BRADY, "Family Saving in Relation to Changes in the Level and Distribution of Income," Nat. Bur. Econ. Research *Studies in Income and Wealth*, Vol. 15, New York 1952, pp. 103-30.
11. —, "Influence of Age on Saving and Spending Patterns," *Mo. Lab. Rev.*, Nov. 1955, 78, 1240-44.
12. —, "Family Saving, 1888-1950," in R. W. Goldsmith, D. S. Brady and Horst Mendershausen, *A Study of Saving in the United States*, Vol. 3, Princeton 1956, pp. 139-276.
13. —, "Quantity and Quality of Clothing Purchases," [62, pp. 137-42].
14. — AND ROSE FRIEDMAN, "Savings and The Income Distribution," Nat. Bur. Econ. Research Stud. in Income and Wealth, Vol. 10, New York 1947, pp. 247-65.
15. HANS BREMS, *Product Equilibrium Under Monopolistic Competition*. Cambridge, Mass. 1951.
16. —, "Long-Run Automobile Demand," *Jour. Marketing*, Apr. 1956, 21, 379-84.
17. G. K. BRINEGAR, "Short-Run Effects of Income Change Upon Expenditure," *Jour. Farm Econ.*, Feb. 1953, 35, 99-109.
18. —, "Income, Savings Balances and Net Saving," *Rev. Econ. Stat.*, Feb. 1953, 35, 71-74.
19. J. K. BUTTERS, L. D. THOMPSON, AND L. L. BOLLINGER, *Investment by Individuals*. Boston 1953.
20. PHILLIP CAGAN, *Pension Plans and Aggregate Saving*. Unpublished manuscript, 1961.
21. GREGORY CHOW, *Demand for Automobiles in the United States*. Amsterdam 1957.

22. CARL CHRIST, CLIFFORD HILDRETH, TA-CHUNG LIU, AND L. R. KLEIN, in "A Symposium on Simultaneous Equation Estimation," *Econometrica*, Oct. 1960, 28, 835-71.
23. L. H. CLARK, ed., *The Life Cycle and Consumer Behavior*. New York 1955.
24. J. W. CLAWSON, "Family Composition, Motivation, and Buying Decisions," [54, pp. 200-17].
25. H. J. CLAYCAM², JR., *The Composition of Consumer Savings Portfolios*. Ph.D. thesis, University of Illinois, 1961. To be published in series, Studies in Consumer Savings, University of Illinois Bur. Econ. and Bus. Research.
26. MORRIS COHEN, "Liquid Assets and the Consumption Function," *Rev. Econ. Stat.*, May 1954, 36, 202-11.
27. — AND M. R. GAINSBROUGH, "Consumer Buying Plans: A New Survey," *Conf. Board Bus. Rec.*, Nov. 1958, 15, 449-67.
28. J. CORNFELD, W. D. EVANS, AND M. HOFFENBERG, "Full Employment Patterns, 1950," *Mo. Lab. Rev.*, Feb. 1947, 70, 163-90.
29. J. S. CRAMER, "Ownership Elasticities of Durable Consumer Goods," *Rev. Econ. Stud.*, Feb. 1958, 25, 87-96.
30. JEAN CROCKETT, "Population Change and the Demand for Food," in *Demographic and Economic Change in Developed Countries*, Universities—Nat. Bur. Com. Econ. Research, Princeton 1960, pp. 457-83.
31. —, "A New Type of Estimate of the Income Elasticity of the Demand for Food," *Proc. Am. Stat. Assoc.*, Bus. Econ. Stat. Sec., 1957, pp. 117-22.
32. — AND IRWIN FRIEND, "A Complete Set of Consumer Demand Relationships," [62, pp. 1-92].
33. T. E. DAVIS, "The Consumption Function as a Tool for Prediction," *Rev. Econ. Stat.*, Aug. 1952, 34, 270-77.
34. JEAN M. DUE, "Postwar Family Expenditure Studies in Western Europe," *Jour. Farm Econ.*, Aug. 1956, 38, 846-56.
35. JAMES DUESENBERY, *Income, Saving and the Theory of Consumer Behavior*. Cambridge, Mass. 1949.
36. —, Comments on "General Saving Relations" [62, pp. 188-91].
37. MARILYN DUNSING AND M. G. REID, "Effect of Varying Degrees of Transitory Income on Income Elasticity of Expenditures," *Jour. Am. Stat. Assoc.*, June 1958, 53, 348-59.
38. ROBERT EISNER, "The Permanent Income Hypothesis: Comment," *Am. Econ. Rev.*, Dec. 1958, 48, 972-90.
39. M. J. FARRELL, "Irreversible Demand Functions," *Econometrica*, Apr. 1952, 20, 171-86.
40. —, "Demand for Motor Cars in the United States," *Jour. Royal Stat. Soc.*, Pt. 2, 1954, 117A, 171-201.
41. ROBERT FERBER, *A Study of Aggregate Consumption Functions*. Nat. Bur. Econ. Research Tech. Paper 8. New York 1953.
42. —, "The Role of Planning in Consumer Purchases of Durable Goods," *Am. Econ. Rev.*, Dec. 1954, 44, 854-74.

43. —, *Factors Influencing Durable Goods Purchases*, Bur. Econ. Bus. Research, Univ. of Illinois 1955; reprinted in [23, pp. 75-112].
44. —, "On the Stability of Consumer Expectations," *Rev. Econ. Stat.*, Aug. 1955, 37, 256-66.
45. —, "The Accuracy of Aggregate Savings Functions in the Postwar Years," *Rev. Econ. Stat.*, May 1955, 37, 134-48.
46. —, "A Statistical Study of Factors Influencing Temporal Variations in Aggregate Service Expenditures," in L. H. Clark, ed., *Consumer Behavior: Research on Consumer Reactions*, New York 1958, pp. 394-414.
47. —, "Service Expenditures at Mid-Century," [62, pp. 436-60].
48. —, "Making Less and Saving More," *Illinois Bus. Rev.*, Sept. 1961, 18, 2, 8.
49. — AND P. J. VERDOON, *Research Methods in Economics and Business*. New York 1962.
50. JANET FISHER, "Income, Spending, and Saving Patterns of Consumer Units in Different Age Groups," in Nat. Bur. Econ. Research *Studies in Income and Wealth*, Vol. 15, New York 1962, pp. 75-102.
51. —, "Postwar Changes in Income and Savings Among Consumers in Different Age Groups," *Econometrica*, Jan. 1952, 20, 47-70.
52. —, "Family Life Cycle Analysis on Research on Consumer Behavior," [23, pp. 28-35].
53. M. R. FISHER, "Explorations in Savings Behavior," *Bull. Oxford Univ. Inst. Stat.*, Aug. 1956, 18, 201-78.
54. N. N. FOOTE, ed., *Household Decision-Making*. New York 1961.
55. MILTON FRIEDMAN, "A Method of Comparing Incomes of Families Differing in Composition," in Nat. Bur. Research, *Studies in Income and Wealth*, Vol. 15, New York 1952, pp. 9-20.
56. —, *A Theory of the Consumption Function*. Nat. Bur. Econ. Research, Princeton 1957.
57. —, *Windfalls, the "Horizon" and Related Concepts in the Permanent Income Hypothesis*. Unpublished memorandum.
- 57A. —, "Comments on Windfall Income and Consumption," [62, pp. 191-206].
58. — AND SIMON KUZNETS, *Income from Independent Professional Practice*. New York 1945.
59. IRWIN FRIEND AND I. B. KRAVIS, "Consumption Patterns and Permanent Income," *Am. Econ. Rev., Proc.*, May 1957, 47, 536-55.
60. — AND I. B. KRAVIS, "Entrepreneurial Income, Saving and Investment," *Am. Econ. Rev.*, June 1957, 47, 269-301.
61. — AND STANLEY SCHOR, "Who Saves?," *Rev. Econ. Stat.*, May 1959, Pt. 2, 41, 213-48.
62. — AND ROBERT JONES, ED., *Proceedings of the Conference on Consumption and Saving*, Vol. 2. Philadelphia 1960.
- 62A. — AND —, "The Concept of Saving," [62, pp. 336-59].
63. —, "Discussion of Milton Friedman's 'A Theory of the Consumption

- Function,' " in L. H. Clark, ed., *Consumer Behavior: Research on Consumer Reactions*, New York 1958, pp. 456-58.
64. PAUL GLICK, "The Family Cycle," *Am. Soc. Rev.*, Apr. 1947, 12, 164-74.
 65. RAYMOND GOLDSMITH, *A Study of Saving in the United States*. Princeton 1955.
 66. SIDNEY GOLDSTEIN, *Consumption Patterns of the Aged*. Philadelphia 1960.
 67. H. W. GUTHRIE, "Consumers' Propensities to Hold Liquid Assets," *Jour. Am. Stat. Assoc.*, Sept. 1960, 55, 469-90.
 68. MORRIS HAMBURG, "Demand for Clothing," in I. Friend and R. Jones, *Proceedings of the Conference on Consumption and Saving*, Vol. 1, Philadelphia 1960, pp. 311-58.
 69. WILLIAM HAMBURGER, "The Relation of Consumption to Wealth and the Wage Rate," *Econometrica*, Jan. 1955, 23, 1-17.
 70. —, "The Determinants of Aggregate Consumption," *Rev. Econ. Stud.*, No. 57, 1954-55, 22, 23-35.
 71. A. H. HANSEN, "The Pigouvian Effect," *Jour. Pol. Econ.*, Dec. 1951, 49, 535-36.
 72. H. S. HOUTHAKKER, "The Permanent Income Hypothesis," *Am. Econ. Rev.*, June 1958, 48, 396-404.
 73. —, "An International Comparison of Household Expenditure Patterns, Commemorating the Centenary of Engel's Law," *Econometrica*, Oct. 1957, 25, 532-51.
 74. — AND JOHN HALDI, "Household Investment in Automobiles: An Intemporal Cross-Section Analysis," in I. Friend and R. Jones, *Proceedings of the Conference on Consumption and Saving*, Vol. I, Philadelphia 1960, pp. 175-225.
 75. Inter-University Committee for Research on Consumer Behavior, *Anticipation of Saving Behavior*, Interim Report No. 6, 1961.
 76. F. T. JUSTER, "Predictions and Consumer Buying Intentions," *Am. Econ. Rev., Proc.*, May 1960, 50, 604-17.
 77. —, "The Predictive Value of Consumers Union Spending-Intentions Data," in *The Quality and Economic Significance of Anticipations Data*, Nat. Bur. Econ. Research, Princeton 1960, pp. 263-89.
 78. —, *Consumer Expectations, Plans, and Purchases: A Progress Report*, Nat. Bur. Econ. Res., Occas. Paper 70, New York 1957.
 79. GEORGE KATONA, in *The Quality and Economic Significance of Anticipations Data*, Nat. Bur. Econ. Research, Princeton 1960, p. 455.
 80. —, "Attitude Change: Instability of Response and Acquisition of Experience," *Psych. Monogr.*, Vol. 72 (10). Am. Psych. Assoc., Washington, D.C. 1958.
 81. —, "Contribution of Psychological Data to Economic Analysis," *Jour. Am. Stat. Assoc.*, Sept. 1947, 42, 449-59.
 82. —, "Effect of Income Changes on the Rate of Saving," *Rev. Econ. Stat.*, May 1949, 39, 95-103.
 83. —, "Analysis of Dissaving," *Am. Econ. Rev.*, June 1949, 39, 673-88.
 84. —, *Psychological Analysis of Economic Behavior*. New York 1951.

85. —, "The Predictive Value of Data on Consumer Attitudes," [23, pp. 66-74].
86. —, *The Powerful Consumer*. New York 1960.
87. — AND J. A. FISHER, "Postwar Changes in the Income of Identical Consumer Units," in Nat. Bur. Econ. Research, *Studies in Income and Wealth*, Vol. 13, New York 1951, pp. 61-122.
88. — AND EVA MUELLER, *Consumer Attitudes and Demand, 1950-52*, Survey Research Center, University of Michigan, Ann Arbor 1953.
89. — AND —, "A Study of Purchase Decisions," in L. H. Clark, ed., *Consumer Behavior: The Dynamics of Consumer Reactions*, New York 1954, pp. 30-87.
90. — AND —, *Consumer Expectations, 1953-56*, Survey Research Center, University of Michigan, Ann Arbor 1956.
91. ELIHU KATZ AND P. F. LAZARSFELD, *Personal Influence*. Glencoe, Ill. 1955.
92. J. M. KEYNES, *The General Theory of Employment Interest and Money*. New York 1936.
93. E. L. KIRKPATRICK, *The Life Cycle of the Farm Family*. Wisconsin Agric. Exper. Sta. Research Bull. 121. Madison 1934.
94. L. R. KLEIN, "Estimating Patterns of Savings Behavior from Sample Survey Data," *Econometrica*, Oct. 1951, 19, 438-54.
95. —, "Assets, Debts, and Economic Behavior," in Nat. Bur. Econ. Research, *Studies in Income and Wealth*, Vol. 14, New York 1951, pp. 195-227.
96. —, "Statistical Estimation of Economic Relations from Survey Data," in GEORGE KATONA, L. R. KLEIN, J. B. LANSING, and J. N. MORGAN, *Contributions of Survey Methods to Economics*, New York 1954, pp. 189-240.
97. —, "Major Consumer Expenditures and Ownership of Durables," *Bull. Oxford Univ. Inst. Stat.*, Nov. 1955, 17, 387-414.
98. —, "Patterns of Savings," *Bull. Oxford Univ. Inst. Stat.*, May 1955, 17, 173-214.
99. —, "Entrepreneurial Saving," [62, pp. 297-335].
100. — AND J. B. LANSING, "Decisions to Purchase Consumer Durable Goods," *Jour. Marketing.*, Oct. 1955, 20, 109-32.
101. — AND J. MARGOLIS, "Statistical Studies of Unincorporated Business," *Rev. Econ. Stat.*, Feb. 1954, 36, 33-46.
102. M. E. KREININ, J. B. LANSING AND J. N. MORGAN, "Analysis of Life Insurance Premiums," *Rev. Econ. Stat.*, Feb. 1957, 39, 46-54.
103. —, "Factors Associated with Stock Ownership," *Rev. Econ. Stat.*, Feb. 1959, 41, 12-23.
104. —, "Analysis of Liquid Asset Ownership," *Rev. Econ. Stat.*, Feb. 1961, 43, 76-80.
- 104A. —, "Windfall Income and Consumption," *Am. Econ. Rev.*, June 1961, 51, 388-90.
105. SIMON KUZNETS, *National Product Since 1869*. Nat. Bur. Econ. Research, New York 1946.

106. —, "Proportion of Capital Formation to National Product," *Am. Econ. Rev.*, May 1952, 42, 507-26.
107. HELEN LAMALE, *Methodology of the Survey of Consumer Expenditures in 1950*. Philadelphia 1959.
108. J. B. LANSING, *An Investigation of Response Error*. Univ. of Illinois, Bur. Econ. Bus. Research, Stud. in Consumer Savings, No. 2, 1961.
109. — AND S. B. WITHEY, "Consumer Anticipations: Their Use in Forecasting Behavior," Nat. Bur. Econ. Research *Studies in Income and Wealth*, Vol. 17, Princeton 1955, pp. 381-453.
110. A. P. LERNER, "Fiscal Finance and the Federal Debt," *Soc. Research*, Feb. 1943, 10, 38-51.
111. VERNON LIPPITT, *Determinants of Consumer Demand for Housefurnishings and Equipment*. Cambridge, Mass. 1959.
- 111A. NISSAN LIVIATAN, "Errors in Variables and Engel Curve Analysis," *Econometrica*, July 1961, 29, 336-62.
112. HAROLD LYDALL, "The Life Cycle in Income, Saving, and Asset Ownership," *Econometrica*, Apr. 1955, 23, 131-50.
113. —, "Income, Assets, and the Demand for Money," *Rev. Econ. Stat.*, Feb. 1958, 40, 1-14.
114. R. P. MACK, "The Direction of Change in Income and the Consumption Function," *Rev. Econ. Stat.*, Nov. 1948, 30, 329-58.
115. —, "Economics of Consumption," in B. F. Haley, ed., *A Survey of Contemporary Economics*, Vol. 2, Homewood, Ill. 1952, pp. 39-78.
116. SHERMAN MAISEL AND LOUIS WINNICK, "Family Housing Expenditures: Elusive Laws and Intrusive Variances," in I. Friend and R. Jones, ed., *Proceedings of the Conference on Consumption and Saving*, Vol. 1, Philadelphia 1960, pp. 359-435.
117. J. G. MARCH AND H. A. SIMON, *Organizations*. New York 1959.
118. E. S. MAYNES, "The Relationship Between Tangible Investment and Consumer Saving," *Rev. Econ. Stat.*, Aug. 1959, 41, 287-93.
119. HORST MENDERSHAUSEN, "Differences in Family Saving between Cities of Different Sizes and Locations, Whites and Negroes," *Rev. Econ. Stat.*, Aug. 1940, 22, 122-37.
120. D. L. MILLER, "The Life Cycle and the Impact of Advertising," in [23, pp. 61-65].
121. JACOB MINCER, "Labor Supply, Family Income and Consumption," *Am. Econ. Rev., Proc.*, May 1960, 50, 574-83.
122. FRANCO MODIGLIANI, "Fluctuations in the Saving-Income Ratio: A Problem in Economic Forecasting," Nat. Bur. Econ. Research *Studies in Income and Wealth*, Vol. 11, New York 1949, pp. 371-443.
123. — AND ALBERT ANDO, "The 'Permanent Income' and the 'Life Cycle' Hypotheses of Saving Behavior: Comparison and Tests," [62, pp. 49-174].
124. — AND —, "Tests of the Life Cycle Hypothesis of Savings," *Bull. Oxford Univ. Inst. Stat.*, May 1957, 19, 99-124.
125. — AND R. E. BRUMBERG, "Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data," in K. K. KURIHARA, ed., *Post-Keynesian Economics*, New Brunswick, N.J. 1954, pp. 388-436.

126. J. N. MORGAN, "Factors Relating to Consumer Saving when It Is Defined as a Net-Worth Concept," in L. R. Klein, ed., *Contributions of Survey Methods to Economics*, New York 1954, Ch. 3, 4.
127. —, "A Review of Recent Research on Consumer Behavior," in L. H. Clark, ed., *Consumer Behavior: Research on Consumer Reactions*, New York 1958, pp. 93-219.
128. —, "Consumer Investment Expenditures," *Am. Econ. Rev.*, Dec. 1958, 48, 874-902.
129. EVA MUELLER, "The Desire for Innovations in Household Goods," in L. H. Clark, ed., *Consumer Behavior: Research on Consumer Reactions*, New York 1958, pp. 13-37.
- , "Consumer Attitudes: Their Influence and Forecasting Value," in *The Quality and Economic Significance of Anticipations Data*, Nat. Bur. Econ. Research, Princeton 1960, pp. 149-75.
- MARC NERLOVE, "A Note on Long-Run Automobile Demand," *Jour. Marketing*, July 1957, 22, 57-64.
132. —, *Distributed Lags and Demand Analysis*, U.S. Dept. Agric., Washington 1958.
133. A. M. OKUN, "The Value of Anticipations Data in Forecasting National Product," in *The Quality and Economic Significance of Anticipations Data*, Nat. Bur. Econ. Research, Princeton 1960, pp. 411-28.
134. GUY ORCUTT AND OTHERS, *Micro-Analysis of Socio-Economic Systems: A Simulation Study*. New York 1961.
135. — AND A. D. ROY, *A Bibliography of the Consumption Function*. Cambridge University, Dept. of Applied Economics, 1949. Mimeographed.
136. A. R. OXENFELDT, "Comments on the article by Friend and Kravis," in *Am. Econ. Rev., Proc.*, May 1957, 47, 571-74.
137. L. J. PARADISO AND CLEMENT WINSTON, "Consumer Expenditure-Income Patterns," *Surv. Curr. Bus.*, Sept. 1955, 35, 23-32.
138. A. C. PIGOU, "The Classical Stationary State," *Econ. Jour.*, Dec. 1943, 53, 343-51.
139. S. J. PRAIS, "Nonlinear Estimates of the Engel Curve," *Rev. Econ. Stud.*, Pt. 2, 1952-53, 20, 87-104.
140. — AND H. S. HOUTHAKKER, *The Analysis of Family Budgets*. Cambridge, Eng. 1955.
141. G. G. QUACKENBUSH AND J. D. SHAFFER, *Collecting Food Purchase Data by Consumer Panel*, Michigan State Univ. Agric. Exper. Sta. Tech. Bull. 279. East Lansing 1960.
142. M. G. REID, "Effect of Income Concept Upon Expenditure Curves of Farm Families," Nat. Bur. Econ. Research *Studies in Income and Wealth*, Vol. 15, New York 1952, pp. 133-74.
143. —, "The Relation of the Within-Group Transitory Component of Income to the Income Elasticity of Family Expenditure." Unpublished paper, 1952.
144. —, "Capital Formation in Residential Real Estate," *Jour. Pol. Econ.*, Apr. 1958, 66, 131-53.
145. —, Comments in I. Friend and R. Jones, eds., *Proceedings of the*

- Conference on Consumption and Saving*, Vol. 1, Philadelphia 1960, pp. 143-55.
146. — AND MARILYN DUNSING, "Effect of Variability of Incomes on Level of Income-Expenditure Curves on Farm Families," *Rev. Econ. Stat.*, Feb. 1956, 38, 90-95.
 147. E. M. SNYDER, "Impact of Long-Term Structural Changes on Family Expenditures, 1888-1950," in L. H. Clark, ed., *Consumer Behavior: Research on Consumer Reactions*, New York 1958, pp. 359-93.
 148. G. J. STIGLER, "The Early History of Empirical Studies of Consumer Behavior," *Jour. Pol. Econ.*, Apr. 1954, 62, 95-113.
 149. RICHARD STONE, *The Measurement of Consumers' Expenditure and Behaviour in the United Kingdom*. Cambridge, Eng. 1954.
 150. G. STUVEL AND S. F. JAMES, "Household Expenditures of Food in the United States," *Jour. Royal Stat. Soc., Ser. A*, 113, Pt. 1, 1950, 59-80.
 151. D. B. SUITS, "The Demand for Automobiles in the United States, 1910-1956," *Rev. Econ. Stat.*, Aug. 1958, 40, 273-80.
 152. GERHARD TINTNER, "Static Econometric Models and Their Empirical Verification," *Metroeconomica*, 1951, 2, 172-81.
 153. JAMES TOBIN, "A Statistical Demand Function for Food in the U.S.A.," *Jour. Royal Stat. Soc., Ser. A*, 113, Pt. II, 1950, 113-41.
 154. —, "Relative Income, Absolute Income, and Saving," in *Money, Trade, and Economic Growth, Essays in Honor of John Henry Williams*, New York 1951, 135-56.
 155. —, "Asset Holdings and Spending Decisions," *Am. Econ. Rev.*, May 1952, 42, 109-23.
 156. —, "Discussion of Milton Friedman's 'A Theory of the Consumption Function,'" in L. H. Clark, ed., *Consumer Behavior: Research on Consumer Reactions*, New York 1958, pp. 447-54.
 157. —, "On the Predictive Value of Consumer Intentions and Attitudes," *Rev. Econ. Stat.*, Feb. 1959, 41, 1-11.
 158. U. S. DEPT. OF AGRICULTURE, *Family Incomes and Expenditures* (titles vary). Misc. Pubs. between No. 339 and No. 489, 1939-41.
 159. U. S. BUREAU OF LABOR STATISTICS, *Family Income and Expenditures in (selected areas)*. U. S. Dept. of Labor Bull. 642-49, 1938-41.
 160. U. S. FEDERAL RESERVE BOARD, *Report of Consultant Committee on Consumer Survey Statistics*. July 1955.
 161. U. S. NATIONAL RESOURCES PLANNING BOARD, *Family Expenditures in the United States*. Washington 1941.
 162. UNIVERSITIES-NAT. BUR. COM. ECON. RESEARCH, *The Quality and Economic Significance of Anticipations Data*. Princeton 1960.
 163. CALLA VAN SYCKLE, "Economic Expectations and Spending Plans of Consumers," *Rev. Econ. Stat.*, Nov. 1954, 36, 451-55.
 164. W. S. VICKREY, "Resource Distribution Patterns and the Classification of Families," *Nat. Bur. Econ. Research Studies in Income and Wealth*, Vol. 10, New York 1947, 260-329.
 165. H. W. WATTS, *Long-run Income Expenditure and Consumer Savings*. Cowles Foundation Paper No. 123. New Haven 1958.

166. — AND JAMES TOBIN, "Consumer Expenditures and the Capital Account," [62, pp. 1-48].
167. G. S. WEISS, TYNAN SMITH, AND T. G. FLECHSIG, "Quarterly Survey of Consumer Buying Intentions," *Fed. Res. Bull.* Sept. 1960, 46, 977-1003.
168. W. H. WHYTE, JR., "The Web of Word of Mouth," in [23, pp. 113-122]; this article first appeared in the November, 1954, issue of *Fortune Magazine*.
169. F. M. WILLIAMS AND C. C. ZIMMERMAN, *Studies of Family Living in the United States and Other Countries*. U. S. Dept. of Agriculture, Misc. Pub. 223, Washington 1935.
170. HERMAN WOLD AND LARS JUREEN, *Demand Analysis*. New York 1953.

THE SOVIET PRICE SYSTEM

By MORRIS BORNSTEIN*

In the Soviet Union, as in all modern, complex economies, prices play an important part in the guidance of economic activity. However, their role in the Soviet economy is different both from their role in a capitalist market economy and from their role in a socialist market economy of the Lange-Taylor-Lerner type [50] [51]. In the Soviet economy (and in the Soviet-type economies of Eastern Europe and Communist China), prices are not an autonomous force determining production, resource allocation, and consumption. Instead, prices are manipulated by the central authorities as one of various instruments intended to accomplish their planned goals.

This paper is an analysis of the role of prices in the Soviet planned economy. Following a summary view of the various functions of prices in the Soviet economy, Sections I-III deal with three major subsystems of the Soviet price system: industrial wholesale prices, agricultural procurement prices, and retail prices.¹ In Section IV some general conclusions are presented. The operation of the Soviet economy (in regard to those aspects pertinent to the subject of this paper) may be characterized as follows:

1. The bill of goods is determined by a central authority, although in some cases in terms of categories, of varying breadth, the specific composition of which is determined by individual enterprises.

2. To secure this bill of goods, the central authority allocates resources primarily in physical terms, without the use of scarcity prices, by estimating production requirements on the basis of technological coefficients and by using physical balances to equate sources and uses of intermediate and final products.²

*The author, assistant professor of economics at the University of Michigan, is grateful to the Ford Foundation and the Joint Committee on Slavic Studies of the SSRC and ACLS for grants in support of research on which this paper is based.

¹Other parts of the price system, not analyzed in this paper, are wages, transportation rates, and foreign trade prices. On wages, see [12] [78]. On transportation rates, see [40, Ch. 11] [68, Ch. 6] [39]. Imports are sold within the USSR at internal ruble prices fixed on the basis of the prices of related domestic goods. On foreign trade prices, see [37] [16] [2] [77].

²On material balances and supply planning, see [54] [52].

3. The central authority specifies, ordinarily in physical terms but usually also in value terms, maximum inputs and minimum outputs for each enterprise, although enterprises may have some role in determining input and output mixes.

4. There is freedom of occupational choice, and money-wage differences constitute the principal mechanism for distributing the labor force.

5. Consumer choice exists, with households free to determine the distribution of their money incomes between consumption and saving and free to buy whatever goods and services they desire in view of prevailing prices and available quantities.³

6. As a result of the importance of economic growth in the political authority's preference scale, the central authority emphasizes investment at the expense of consumption, stresses maximum output rather than optimum utilization of resources, and not only fully commits but tends to overcommit the resources of the economy and of each enterprise.

Within this framework, the functions of the price system may be classified under three very broad headings: (1) control and evaluation, (2) allocation, and (3) income distribution.⁴

Control and Evaluation

Prices are used by the central planners to secure compliance by enterprise managers with the plans elaborated by the former and to evaluate the performance of the managers in the execution of their assigned tasks. Although resource allocation is determined by the planners largely in physical terms, it is necessary for them to express complex input and output targets for the enterprise in value terms in order to have a common denominator for physically dissimilar units of raw materials, labor, and capital goods. Thus the enterprise plan contains not only physical targets, but also value targets, such as those for value of output, cost, use of working capital, tax payments, and profits. To control and evaluate the use of inputs and the production of outputs by enterprises in physical terms alone would be extremely difficult, if not impossible. The use of value targets, moreover, enables the finan-

³ Some limited degree of consumer sovereignty also exists, to the extent to which the central authority responds to evidence, revealed by the exercise of consumer choice, that consumers would prefer a different output-mix from that allocated to consumption purposes by the central authority.

⁴ Various alternative classifications and groupings of the functions of prices in the Soviet (or Soviet-type) economy have been suggested, in Soviet and non-Soviet literature, including [6, pp. 93-95] [31, pp. 52-53] [60, p. 25] [55, p. 488] [45, pp. 25-27] [53, pp. 252-53] [48, pp. 22-23] [68, pp. 72-73]. On this aspect of the Soviet economy, as on many others, pioneering work was done by Naum Jasny [42].

cial authorities (the Ministry of Finance and the banking system) to participate in enforcing enterprise adherence to, and execution of, plan targets.⁵

For control and evaluation purposes, it is convenient to have prices which are stable over long periods of time and are based on the weighted average cost of the industry. The former facilitates intertemporal comparisons of output and cost, while the latter provides an "objective" standard with which the costs of a given enterprise may be compared.

Allocation

Because of the predominance of physical allocation, rather than allocation through the price system, the allocative function of prices is less important in the Soviet economy than the control and evaluation function. However, prices do influence the allocation of resources, and thus the pattern of production, in several ways. Four categories of participants in the economic process are involved: the central planning authorities, the managers of state enterprises, households in their capacity as suppliers of labor, and collective farms.

1. The Soviet planners (in *Gosplan*, the State Planning Committee, and in the planning organs of the ministries and regional economic councils) receive from the government (i.e., the leadership of the Communist Party) a number of broad targets, such as the size and distribution of the national product, as well as some specific targets, such as the level of military expenditures, foreign economic commitments, and physical targets for steel, coal, machine-tools, etc. The planners then deduce a pattern of output to attain these targets, primarily by the use of various "physical" tools, such as technical coefficients, material balances, and, more recently, some linear programming and input-output techniques [34, pp. 100-2]. Prices influence their decisions regarding the pattern of output and the allocation of resources only to a limited extent, in the following ways:

(a) Macroeconomic balances in value terms, such as national product and intersectoral accounts and capital-output ratios, are calculated and used to supplement, to a limited degree, the basic physical planning tools. To date, however, these value calculations appear to have been used primarily for an accounting function of measuring the results of physical planning decisions, rather than themselves serving as the basis for important production and resource allocation decisions [49,

⁵ Their role is strengthened by the Soviet policy of planning enterprise finances so that revenues exceed expenses by a narrow margin and by the requirement that enterprise funds be kept in the banking system, which supervises their expenditure.

p. 323] [15, p. 39] [1, p. 137].⁶ But Soviet planners appear to be moving toward a greater and more positive role for aggregate value planning, as a result of the advocacy of this approach by a number of prominent Soviet economists, the growing acceptance in the USSR of mathematical methods in economics, and the progress of Soviet computer technology.

(b) Prices may have some influence on the selection of technological coefficients for physical planning. Certainly, there are alternative production functions for many goods, and in the course of successive iterations in the balancing process, the technological matrix may be adjusted through the substitution of more abundant for scarcer materials. It has been suggested that relative pricing of substitutes, especially those involving "deficit" commodities is intended to guide the planners at least as much as the managers of state enterprises [31, pp. 60-61]. To the extent to which this occurs, higher relative prices direct scarcer commodities to "more important" uses (i.e., those outputs higher on the planners' priority scale, which are not necessarily those outputs which themselves have higher relative prices).

(c) The planners (including here the "project makers" or design engineers) make allocation decisions involving value calculations. These include decisions regarding alternative variants of a given-output investment project and the assessment of the benefits of modernization or innovation. Both of these involve a choice among alternatives on the basis of a value comparison of heterogeneous inputs (and the latter of outputs as well) and of the present and the future [44] [32] [24].

2. Prices also perform a limited allocative function at the enterprise level, because managers exercise a narrow range of choice and are guided in these choices by prices. It is impossible for the central authorities to specify in complete detail the inputs and outputs of each enterprise. The central authorities usually specify output targets in aggregate (or only slightly disaggregated) physical and value terms—for example, the principal categories of output in tons and the total value of output in rubles—giving the enterprise manager the responsibility to select the types, models, qualities, sizes, etc. Likewise in regard to inputs, the manager is told the amounts of the principal materials, the equipment, and the number of workers in each labor classification that he is authorized to use to achieve (and, if possible, surpass) his plan

⁶ Foreign-trade planning is an important exception requiring some value planning. Even if trade is not based on a comparison of domestic and foreign price ratios, value comparisons in foreign currencies are needed for balance-of-payments reasons. Thus, foreign-trade planning may be done in physical terms (by material balances and technological coefficients) subject to a specified balance-of-payments constraint.

targets. Within these limits, the manager exercises discretion in deciding how to use the resources at his disposal to fulfill the enterprise plan, or, if it cannot be fulfilled in all respects, which parts to fulfill at the expense of which others [13, p. 20] [59, pp. 1-2]. The pertinent prices influence his decisions regarding alternative outputs and inputs.

3. In the Soviet economy, prices affect both the total supply of labor and its distribution. Participation in the labor force is not compulsory. Rather, the state relies on low real wages, resulting from the relationship of money wages and consumer prices, to evoke a high participation rate.⁷ Wage differences, in turn, are the principal means of securing the distribution of the labor force (by skill, industry, enterprise, and geographical location) which the planners desire.⁸ The wage structure is not a guide to the planners in their decisions regarding resource allocation, but rather an instrument for executing these decisions, i.e., for securing the allocation of labor planned in physical terms. Yet the wage structure allocates labor in the narrow sense that relative prices, rather than physical commands, are used to direct labor to the places assigned in the plan.

4. In the collective farm sector, the central authorities have used prices, along with delivery quotas, to influence the allocation of resources to certain crops and products in preference to others.⁹

To perform these allocation functions, scarcity prices, not merely accounting prices, are required. Only scarcity prices will lead planners to allocate resources efficiently and encourage enterprise and collective farm managers to produce the "best" (according to planners' preferences) assortment of goods in the most economical manner. Likewise, because wages are supposed to equate labor supply (by households) and demand (of enterprises, according to planners' targets), they also should be scarcity prices.

Income Distribution

In the Soviet economy, the basis of income distribution is the "socialist" principle of unequal monetary compensation according to labor services rendered, rather than the "communist" principle of distribution

⁷ Participation rates are discussed in [23, pp. 78-81].

⁸ At the present time, qualifications to this simplified statement include (1) forced labor, (2) determination of the skills of the labor force through control of the educational system, (3) assignment of new graduates of technical schools and universities to their first jobs, and (4) such restrictions on mobility as the housing shortage. However, the much more stringent restrictions on freedom of occupational choice of the Stalin era have been eliminated [28] [17] [7].

⁹ In addition, prices have been used (along with delivery quotas) to stimulate total output, but the aim in this case has been primarily to increase the productivity of given resources engaged in agriculture, by increasing real compensation and thus incentives.

according to need; and the promise of unequal monetary compensation is the basis of production incentives.¹⁰

The price system thus determines in the first instance the distribution of money income. The distribution of real income, in turn, is achieved primarily by the sale of goods and services to households exercising free choice in the expenditure of their (unequal) money incomes.¹¹ However, in an effort to make the distribution of real income less unequal than the distribution of money income, the Soviet government fixes low prices for mass consumption goods and high prices for luxury goods by means of differentiated turnover taxes.¹²

Prices thus are called upon to perform several important functions in the Soviet economy. The remainder of this paper is devoted to an appraisal of how well Soviet prices perform their assigned tasks. For this purpose, the Soviet price system is divided into several distinguished interrelated subsystems: industrial wholesale prices, agricultural procurement prices, and retail prices.

I. Industrial Wholesale Prices

The term industrial wholesale prices is here applied to the prices at which goods are transferred or evaluated within the state sector of the Soviet economy. The term covers prices of producers' goods, including raw materials, semifabricates, and machinery, as well as manufactured goods. It excludes prices at which agricultural products are bought by the state from collective farms but includes prices at which government agencies sell agricultural products to state enterprises for processing or to trade organizations for retail sale without further processing. It also excludes foreign trade prices, although it includes prices at which foreign trade organizations buy from and sell to state enterprises.

Types of Industrial Wholesale Prices

The following are the principal types of Soviet industrial wholesale prices [48, pp. 110-11] [53, pp. 93-94] [60, pp. 262-63] [18, p. 53]:

¹⁰ For wage-earners paid on a piece-rate basis, and for managers motivated by the desire for money bonuses [13, Ch. 3-4], the additional money income from more output (and, to a lesser extent, cost-savings, above-plan profits, etc.) means more claims to consumer goods. In the case of the collective farm sector, it is the relationship between (a) state (and free-market) prices for agricultural products and (b) state prices for agricultural inputs and consumer goods bought by collective farmers, that determines the "terms of trade" and the incentive to produce.

¹¹ During "War Communism" (1917-21), payment in kind was widely used [8, p. 43], and during the early 1930's and the Second World War a unique form of differential physical rationing was employed [8, pp. 233-50] [72, pp. 73-74].

¹² The distribution of real income is also less unequal than the distribution of money income because of (1) the allocation of housing and (2) the informal rationing of queues and empty shelves when retail prices are fixed below the market-clearing level.

1. *Enterprise wholesale price (optovaia tsena predpriatia)*. This is the price at which a producing enterprise sells its product to other state enterprises. It excludes turnover tax on the product but includes any turnover tax previously paid by the enterprise on materials going into the product. If the enterprise is responsible for delivery of the product, this price covers transportation cost.

2. *Industry wholesale price (optovaia tsena promyshlennosti)*. This is the price paid by the state-enterprise buyer and includes, in addition to the enterprise wholesale price, the following: (a) the turnover tax, if any, on the product; (b) the mark-up of the industry sales organization, if the product is sold by a central sales organization rather than by the individual enterprise itself;¹³ and (c) transportation charges, if these are borne by the sales organization rather than the buyer. If there are no turnover taxes on the product and the product is sold by the enterprise itself, rather than by a central sales organization, the enterprise wholesale price is also the industry wholesale price.

3. *Settlement price (raschetnaia tsena)*.¹⁴ In some industries where production costs diverge widely, notably in petroleum extraction, individual enterprises or groups of enterprises receive different prices, rather than a single, uniform enterprise wholesale price. In this case, the industry sales organization buys from the enterprise at the individual settlement price and sells to customers at the industry price.

4. *Price of "own procurement" (tsena sobstvennovo zakupka)* is the price paid by enterprises, especially small state enterprises of a (*raion*) subordination and producers' cooperatives, for scrap and raw materials, particularly construction materials, obtained from collective farms.

5. *Local wholesale price (mestnaia optovaia tsena)*. This is the price at which a product made from "own procurements" of raw materials is sold by such enterprises.

Of these five categories of prices, the first three are the most important, applying to the overwhelming bulk of Soviet industrial production, and are fixed by the national or regional authorities. The last two, of lesser importance, are fixed by the local authorities.

Functions of Industrial Wholesale Prices

Three principal functions of Soviet industrial wholesale prices may be distinguished: (1) assistance to the planners in the elaboration of

¹³ For example, the centralized sales scheme is used in the metallurgical, petroleum, and cement industries, while chemical and machine-building enterprises sell their products themselves [48, p. 110].

¹⁴ Also translated sometimes as "accounting price."

a plan, (2) guidance for managerial choice among inputs and outputs, and (3) control and evaluation of managerial performance.

1. Soviet planners calculate many value aggregates, including those of output, cost, wages, sales, and the national accounts. Industrial wholesale prices, along with agricultural procurement, retail, and foreign-trade prices, are necessarily used in these calculations. For example, enterprise wholesale prices are used to calculate value of output and labor productivity targets for individual enterprises and groups of enterprises. Industry wholesale prices—at which goods are transferred within the state sector—are used in the calculation of costs, sales value, profits, and the contribution of the industrial sector to the national product. Both current and constant prices are used, depending on the purpose of the calculation. Industry wholesale prices, together with planned wage rates and transportation charges, are used in the derivation of “estimate prices” (*smetnye tseny*), at which construction cost estimates are prepared [53, pp. 209-13].

As a rule, industrial wholesale prices are used by the planners without any adjustment.¹⁵ However, there is an exception in the case of investment-project planners, whose task is to choose among alternative technological variants of a given-output project (e.g., a thermal or hydro-electric power station of a given capacity). In comparing operating costs against initial construction costs, they have sometimes used various “coefficients of scarcity” (*koeffitsienty deficitnosti*) to correct what they regarded as unduly low industry wholesale prices, which, in their opinion, inadequately reflected the scarcity of various raw materials. Because little has been published regarding these adjustments,¹⁶ it is not possible to estimate how widely they are used or how great are the adjustments made to the established industry wholesale prices. In the absence of information on these questions, it is assumed in this paper that the planners in general use the established industrial wholesale prices.

Although industrial wholesale prices are indispensable in the elaboration of output, cost, sales, and profit targets, these value calculations fill primarily an accounting function rather than serving as the basis for allocation decisions.

2. The allocative effect of industrial wholesale prices is felt primarily in the guidance of managerial choice among alternative outputs and inputs. The enterprise plan specifies total output and its main component categories (the “assortment plan”), but the enterprise manager usually exercises some choice regarding the detailed composition of these categories, i.e., the types, grades, sizes, and qualities. He also has

This is the case also in the construction of the national accounts.

The most extended discussion which I have been able to locate is [47, pp. 49-50].

some discretion regarding his input-mix for a given output, although this discretion is sharply limited both by the technical possibilities for altering his production functions and by the physical allocation of many materials and the earmarking of expense categories by the central authorities.

In regard to outputs, the structure of industrial wholesale prices is supposed to induce managers to fulfill the assortment plan, in the first instance, and, within the limits of the assortment plan to stress scarcer in preference to less scarce items and higher quality in preference to lower quality items [53, pp. 131-32]. Similarly, in regard to inputs, the structure of wholesale prices (and freight rates) is supposed (1) to encourage the use of less scarce in preference to scarcer varieties of materials (e.g., ferrous rather than nonferrous metals); (2) to economize transportation by making local materials and fuels "cheaper" to users than materials and fuels from distant sources; (3) to carry out a given fuel balance policy (favoring the use of coal and natural gas, in preference to petroleum); and (4) to promote mechanization, by encouraging the use of larger rather than smaller machines and the adoption of new models [53, pp. 118-21].

3. Finally, in the control and evaluation of managerial performance, industrial wholesale prices are used (along with other prices, such as wage rates, transportation rates, and, in the case of retail trade enterprises, state retail prices) in measuring the degree of fulfillment of plan targets. They are similarly used in comparing the performance of the enterprise, in regard to output, cost, and profit, with the performance of other enterprises and with its own performance in earlier accounting periods.

"Good" or "successful" managerial performance is nominally measured in terms of the degree of fulfillment of the enterprise plan, but the latter, in turn, is composed of a number of targets or indicators, including those for output, cost, and profit. However, the structure of rewards for good, and penalties for bad, managerial performance specified by the central authority establishes a clear hierarchy in which the "quantitative" total output target ranks above such "qualitative" targets as those for the composition of output (the "assortment plan"), profit, and unit cost [13, p. 71] [29, pp. 271 ff.]. In making such choices as are available to him in his circumscribed area of decision-making, the enterprise manager endeavors to achieve those plan targets which are accorded more importance in the evaluation of his performance by higher echelons, at the expense of those regarded by them as less important.¹⁷

¹⁷ For example, the assortment plan may be sacrificed in favor of the gross value of output plan by producing more of the higher-priced and less of the lower-priced items

This distinction is significant in the analysis of Soviet industrial prices because output (total and assortment) may be measured in different (relative) prices than cost and profit. (Output is also often measured in physical units.) Output is evaluated at constant enterprise wholesale index prices of some base period or date, because intertemporal comparison of the growth of output is of prime interest. Cost and profit are measured in current prices at which goods are transferred, including materials costs at industry wholesale prices and sales revenue at enterprise wholesale prices. These constant prices may be identical to current transfer prices at some point in time, such as the beginning of a long-term plan period, but they tend to diverge in level and structure as the two evolve separately.¹⁸

Output targets and input authorizations are also specified in physical terms, such as linear meters of cloth, tons of weight, surface area, etc. These give rise to what Grossman has called physical quasi-prices [31, p. 54], measuring the terms of exchange between alternative products either in fulfilling the output target, or as input costs. Clearly, the relative importance of different products as measured in these physical units is likely to differ from their relative importance as measured by their relative prices either in the constant index price structure or in the current transfer price structure. Thus, a third price structure may be distinguished.

Because different enterprise plan targets or authorizations are specified in different prices, the relative importance of the different kinds of prices depends on the relative importance of the targets expressed in them. Because output targets are of primary importance, constant index money prices and physical quasi-prices tend to influence managerial decisions more than current transfer prices. As between the first two types of prices, both of which may be used in the measurement of out-

in the enterprise's production schedule. Likewise, the relatively more material-intensive items may be produced at the expense of the less material-intensive, since the former contribute more, for a given amount of labor involved in their processing, to the final value of output. Similarly, the assortment plan may be sacrificed in favor of the profit plan by producing more of the items with higher unit profits and less of those with lower unit profits. Targets for cost reduction may be met not by increasing efficiency in the use of inputs but by decreasing quality [59] [48, pp. 32-33] [13, pp. 117-19]. To enforce closer adherence to the assortment plan limited experiments have been undertaken to measure value of output on a value-added (i.e., wages or wages and profits) basis, rather than in terms of gross value of output [25]. Also bonuses for fulfillment and overfulfillment of output plans have been made contingent, at least in some industries, on the fulfillment of cost reduction plans [61].

¹⁸ This divergence may be substantial, as during the 25-year period that 1926/27 prices were used for output calculations despite many changes in current transfer prices [57], or relatively modest, as during the period beginning in 1956 during which transfer prices of July 1, 1955 have been used as constant prices for output calculations and there has been no general change in transfer prices.

put, their relative importance differs from industry to industry, depending upon the extent to which total output targets may conveniently be expressed in physical units.

Formation of Industrial Wholesale Prices

Soviet enterprise wholesale prices are composed of two principal parts: planned average branch cost of production (*sebestoimost'*) and a profit mark-up.

The Soviet cost concept of *sebestoimost'* has no exact equivalent in Western cost accounting. It includes direct and indirect labor, including wages, salaries, and social insurance payments; basic and auxiliary materials, including fuel and power; depreciation (but not depletion) allowances; and various overhead expenses, such as those for postage, business travel, and expenditures for workers' housing and for workers' education.¹⁹

Although in some instances differential rent and short-term interest payments for working capital are included in *sebestoimost'*, both rent and interest on capital are ordinarily omitted. As a result, Soviet cost accounting practices, in comparison with the results that would be obtained if Western accounting practices were used, result in lower total nominal costs and in different relative costs as among products and industries [69, p. 143].²⁰ For convenience, *sebestoimost'* is hereafter rendered in this paper as "cost of production" or "production cost."

The cost figure used as a basis for enterprise wholesale prices (and, in turn, industry wholesale prices) is the planned average cost of production of the enterprises producing the product. However, the figure is not simply a weighted average of planned costs of all producers, but, rather, excludes some of the highest cost producers. The Soviet literature on the subject reveals some dispute about how "progressive" (i.e., how ambitious) the cost target should be. Some writers advocate a cost target based on the performance of "leading" enterprises [53, p. 103], while others favor a more modest target which takes into account the capabilities of all enterprises in the corresponding branch of industry [48, p. 108].

The other component of enterprise wholesale prices, in addition to planned average branch production cost, is a profit mark-up intended to

¹⁹ There are several slightly different concepts of *sebestoimost'*, corresponding to the differences between gross and net production and shop and enterprise expenses [53, pp. 95 ff.].

²⁰ The shares of the principal components of the *sebestoimost'* for aggregate Soviet industrial production in 1959 were as follows (in per cent): basic materials, 63.9; auxiliary materials, 4.8; fuel, 3.6; power, 1.7; labor, 19.3; and others, 3.2 [67, p. 161]. The deficiencies of Soviet cost accounting are analyzed in [19].

provide a "normal" profit, for the branch as a whole, of about 5 per cent [5, p. 290] [48, p. 84] [68, p. 13]. Profit in the Soviet economy is not intended to allocate resources among alternative uses, but rather to provide a source of net income or accumulation to the state, to serve as an instrument of financial control, and to promote the "business-like" operation of Soviet enterprises.

A major part of the profits of Soviet enterprises is paid to the state budget as profits tax, while the remainder is retained by the enterprise for the expansion of its fixed and working capital and for the payment of bonuses and the construction of housing, nurseries, and recreational facilities for the workers of the enterprise. In addition to the use of its retained profits, the enterprise's expansion may be financed through budget grants representing the redistribution of profits tax and other tax collections. Periodic payments of profits tax liabilities, based on planned profits (which are in turn based on planned sales and costs), furnish a basis for supervision and control of enterprise operations by the financial authorities.

For both the accumulation and control purposes, the turnover tax also can be, and is, used. Soviet writers stress that profits and the turnover tax are both forms of "net income" (*chisty dokhod*) to the state, and that both are needed, since each has its own special function. That is, although their economic nature—as a vehicle for monetary accumulation—is the same, they perform different roles in economic organization and administration. Profit is considered a tool of control designed to measure (one facet of) managerial performance. But it is convenient to have a supplementary form of accumulation which provides net income to the state without at the same time constituting enterprise income. Thus, in the case of consumer goods production, a high rate of accumulation can be achieved through the turnover tax without involving an abnormally high rate of profit for producing or trading enterprises [3, pp. 158-60] [5, p. 293].

Underlying this conception of the nature and role of profit is the notion that efficient operation of enterprises is promoted by a rather modest level of profit and is discouraged by either above-normal profits or below-normal profits or planned losses. It is asserted that unduly high profits fail to spur managers to reduce costs. Likewise planned losses and subsidies discourage managers from striving for lower costs and lead them to depend on outside assistance in the form of budget grants, rather than to maintain the financial independence that goes with "sound" operation. On the other hand, a pricing policy that keeps most enterprises in the industry near the margin of profitability is believed to promote efficiency, at the same time that it provides, through profits

tax liabilities, a vehicle for control over enterprise operations by the financial authorities [68, pp. 80-81] [48, p. 82].²¹

There are two principal reasons why enterprise wholesale prices have in various cases exceeded the level necessary to cover cost and provide a small profit. One arises simply from the infrequency with which prices are revised. The last general revision of industrial wholesale prices occurred on July 1, 1955, and the preceding one on January 1, 1952. The next revision is apparently scheduled for 1962 [63, July 17, 1960]. During the interval between price revisions, reductions in costs lead to profits much in excess of 5 per cent in industries, such as machine-building, characterized by rapid changes in productivity. Second, above-average profits occur in the case of "deficit" or scarce commodities which are assigned relatively high prices, compared to the prices of substitutes, to discourage their use. However, this use of industrial wholesale prices as an allocation device—i.e., as a partial rationer of commodities—has been confined to a comparatively small number of basic industrial goods, notably nonferrous metals such as copper, tin, and lead, quality steels, and refined petroleum products [69, p. 158].

Much of the Soviet literature on price formation is concerned with the conflict arising between the belief that a "normal" profit promotes efficiency and the fact that average-cost pricing inevitably means above-normal profits for lower-than-average-cost producers and below-normal profits (or losses) for higher-than-average-cost producers. Wide variations in unit costs of production exist, for example, in the extractive, metallurgical, machine-building, textile, footwear, and sugar-refining industries, due to differences in natural conditions of production, distance from sources of raw materials and fuels, technology, degree of specialization of production, and regional wage rates [68, pp. 74-75]. To cope with the resulting differences in costs, two main approaches are used. In the metallurgical, chemical, and light industries, uniform enterprise wholesale prices are widely used, and the resulting variation in profitability, ranging from planned losses to high profits, is met through intradepartmental redistributions of funds to the enterprises in the former category from those in the latter.²² On the other hand,

²¹ In Soviet parlance, this is the pricing policy which is consistent with *khozraschet* ("business calculation") operation of enterprises, the characteristics of which are (1) the exchange of goods on the basis of state supply plans and contracts; (2) covering all of the enterprise's current (i.e., noncapital) expenditures from its own revenues; (3) direct dependence of the financial status of the enterprise on the effective use of its resources, i.e., on the successful fulfillment of the various targets of the enterprise plan; (4) control of enterprise activity through the control of its financial resources by budget and credit controls; (5) "material self-interest" of the employees of the enterprise in its financial results; and (6) personal and individual responsibility of the enterprise director for the use of state resources in accordance with the plan [53, pp. 58-59].

²² Under the functional form of economic organization in effect up to mid-1957, these

some industries use settlement prices, which are different for each enterprise (as in sugar-refining) or group of enterprises (as in petroleum extraction) [68, pp. 82-84].

In both cases, however, the objective is to secure a single buying price for buyers of the product, in order to make their costs (in regard to raw materials and fuels), and thus their performance, more comparable. The widespread use of delivered prices (in some cases, differentiated according to geographical zones) is also directed toward this end. In addition, it places the demand for transport services with the seller, who is likely, under the prevailing conditions of a "sellers' market," to be less wasteful of them than the buyer [31, p. 61].²³

The industry wholesale price for a good may differ from the enterprise wholesale price because of the turnover tax, as well as because of the sales mark-up and transportation charges. Before the 1949 price reform, the turnover tax was levied at very low rates (usually .5-1 per cent) on various producer goods to give the financial authorities an additional instrument of supervision and control. Since the 1949 reform, it has not been levied on producer goods except in the case of petroleum products, natural gas, and electric power, where the tax (rather than a higher profit mark-up) is used to secure the desired relative price structure for alternative sources of energy—i.e., to raise the prices of these sources relative to the price of coal [68, p. 24].

On the other hand, in the case of some manufactured consumer goods, such as textiles, the turnover tax has been levied since 1939, and particularly since 1949, in a way intended to use the enterprise wholesale price structure to promote the fulfillment of the enterprise's assortment plan. On most manufactured consumer goods, the tax is levied as a specific ruble amount, permitting the existence of two distinct price structures—one for the state retail prices at which these goods are finally sold to households and the other for the enterprise wholesale prices received by producers. The difference between the two prices consists of turnover tax and mark-ups for the industry's central sales organization and for the wholesale and retail trade network. Thus the relative prices of two goods in the state retail price

involved redistribution of profits within a ministry. Under the territorial form in effect since then, funds are transferred among enterprises within a regional economic council [68, pp. 79-81].

²³ The delivered price charged by a central sales organization is usually FOB station of destination and covers the enterprise wholesale price, central sales mark-up, and average transportation cost. FOB station of origin is commonly the basis of price quotation when there is no central sales organization, or when transportation charges are not large relative to the price of the good, as in the case of machinery. Zone pricing is used when transportation charges are large relative to price (e.g., in the case of construction materials) in an effort to prevent excessive absorption of transport costs and excessively long hauls [53, pp. 139-44] [68, pp. 91-99].

structure need not be, and usually are not, the same as their relative prices in the enterprise wholesale price structure. In the former, relative prices are set to manipulate consumption—essentially to adjust sales to supply. In the latter, prices are set with the aim of providing equal profitability for alternative varieties of output and thereby eliminating the incentive to achieve the gross value of output target by “violating” the assortment plan. If the tax were levied not as a specific ruble amount but as a uniform percentage of the final retail or wholesale price, the effect would be to apply the state retail relative price structure to the output of the producing enterprise. Under this price structure, certain varieties of output would be more profitable to produce than others, and the enterprise would attempt to produce more of the more profitable varieties and less of the less profitable varieties than called for in its assortment plan, since by doing so it would have to use less rubles of inputs to produce a given 100 rubles of output [48, pp. 121-31] [68, pp. 330-34].²⁴

Evaluation of Industrial Wholesale Prices

Soviet industrial wholesale prices clearly are not scarcity prices, inasmuch as they are fixed on the basis of average labor costs and neglect scarcity and demand. Supply and demand relationships are largely ignored in price determination (again, with some exceptions), and surpluses and shortages rarely lead to changes in these prices. How satisfactory are such prices for the performance of the three functions distinguished above?

1. Such accounting prices clearly do not offer sound guidance to the planning authorities in the choice among alternatives regarding production and investment, since they do not accurately measure the marginal costs of alternative inputs or the marginal values of alternative outputs. By omitting land and capital charges, these prices lead to the undervaluation of raw materials and equipment relative to labor in cost calculations and to the excessive use of the former relative to the latter. Recognition of these defects of industrial wholesale prices [48, p. 37] [65, p. 35] no doubt explains in part the unwillingness of Soviet planners to use them as the basis for resource allocation decisions and their reliance, instead, on physical planning techniques. Yet the preference for physical planning and the suspicion of prices as a proper device for socialist resource allocation have surely contributed to the Soviet

²⁴ The tax is still levied as a percentage of the retail price in the case of many goods, particularly those whose assortment is considered relatively narrow (such as light bulbs, radios, and clocks) on the ground that in these cases the administrative advantage of not having to fix individual turnover tax amounts outweighs the disadvantage arising from the enterprise's incentive to deviate from the assortment plan [53, pp. 82-83].

failure to devise industrial wholesale prices which would more closely reflect scarcity.

The consequence of the reliance on physical planning, however, is that the resulting plans are not based on the precise evaluation of the terms on which alternatives are offered which a system of scarcity prices would provide. Hence, the plans do not achieve the optimum use of resources for the attainment of the goals set. (Also, the regime itself does not know with comparable precision the opportunity costs of alternative decisions facing it.) However, in the absence of scarcity prices, there may well be no loss, and indeed there may be some gain, in rationality by using physical planning techniques in preference to value calculations involving nonscarcity prices. Given the present industrial wholesale prices, Soviet planners may be wise not to rely on value planning.

2. Because Soviet industrial wholesale prices do not reflect relative scarcities of goods and factors of production, they likewise are not desirable guides for the choices among alternative inputs and outputs which enterprise managers are authorized to make (or which they make without authorization in the course of achieving some plan targets at the expense of others). However, precisely because the central authorities lack confidence that industrial wholesale prices will lead enterprises to achieve the results they desire of them, they limit severely, by commands and directives in physical terms, the range of choices which enterprise managers can make on the basis of these prices.

3. The principal function of industrial wholesale prices is the control and evaluation of enterprise performance in the fulfillment of plans determined by the central authorities principally through physical planning. For this purpose, prices of the (merely) accounting type are satisfactory, and the lack of scarcity prices is not necessarily disadvantageous. Accounting prices do provide a supplementary method of verifying adherence to physical plans, and average-cost pricing facilitates comparison of the performance of the individual enterprise with that of the industry as a whole. The absence of an interest charge on fixed capital, although a serious deficiency in so far as allocation of capital is concerned, is not important for the control and evaluation of the enterprise, because capital as such (as distinct from specific capital goods) is not among the inputs which are entrusted to the manager and whose use by him in accordance with the enterprise plan is to be enforced and evaluated with the aid of the price system. Thus, although they fail to reflect relative scarcities, industrial wholesale prices can nevertheless perform their control and evaluation function reasonably well.

The unsuitability of industrial wholesale prices for allocative purposes restrains any inclination on the part of planners to shift toward value, rather than physical, planning. It also is a barrier to any substantial decentralization of decision-making to the enterprise level under which enterprise managers would determine their inputs and outputs on the basis of value calculations of cost, revenue, and profit. Either or both of these changes in Soviet economic planning would require a system of scarcity prices, reflecting both supply and demand (according to planners' preferences), upon which the central authorities could rely to secure the resource allocation and bill of goods which they desire.

II. *Agricultural Procurement Prices*

Agricultural procurement prices here refer to the prices at which agricultural producers sell to state procurement agencies. Collective farm market prices, at which agricultural producers sell to households, are analyzed in the following section as retail prices. Most of the discussion in this section concerns the agricultural procurement prices paid to collective farms, since the prices paid to state farms are essentially similar to the industrial wholesale prices analyzed in the preceding section.²⁵

State Farm Procurement Prices

State farm delivery prices (*sdatochnye tseny sovkhovov*) are essentially different in nature from the agricultural procurement prices paid to collective farms. In the case of state farms, the delivery price is a "transfer" price which performs only a nominal "accounting" function. In the case of collective farms, agricultural procurement prices directly and strongly influence the volume and composition of output.

State farms are "factories in the field" with a *khozraschet* status (see fn. 21) similar to that of state enterprises in industry, transportation, etc. Their employees receive money wages on a piece-rate basis, and they calculate cost of production (*sebestoimost'*) in essentially the same way as other state enterprises. Accordingly, their delivery prices are supposed to be comparable to enterprise wholesale prices in in-

²⁵ This analysis of agricultural procurement prices draws heavily on the comprehensive studies of Nimitz [56] and Karcz [46], to which the reader is referred for a more detailed discussion, supported by extensive statistical data. The latter also contains a discussion of various other, minor aspects of the pricing of agricultural products, such as the valuation of payments in kind by collective farms to the former machine tractor stations (MTS's), and "return sales" whereby, in addition to money payments, producers of selected crops received preferential opportunities to buy specified agricultural and industrial products at privileged prices. Return sales are also discussed at length in [68, pp. 277-83].

dustry, covering cost of production (as reckoned in Soviet state enterprises) plus a small profit mark-up. Like other state enterprises, they are subject to profits taxes, on the one hand, and are entitled to receive budget grants, normally only for the expansion of fixed and working capital, on the other.

In practice, however, state farm delivery prices have usually been fixed very close to the corresponding state purchase prices for collective farms. These prices have not been high enough to cover state farm operating costs, and as a result state farms have long shown large operating losses (both "planned" and "unplanned") which were met by operating subsidies from the budget [48, pp. 81-82]. Thus, the pricing of state farm deliveries has not in fact followed the operating-cost-plus-profit criterion generally applied since 1949 to industrial wholesale prices. Apparently the Soviet government has been reluctant to fix state farm prices "out of line" with collective farm prices. Since state farm costs (and thus, prices) are supposed to serve as a model and target for collective farms, state farm prices could hardly be fixed above the prevailing collective farm procurement prices!

Because state farm costs are reimbursed by the combination of delivery prices and subsidies, the failure of prices to cover costs does not restrain output. In contrast, in the case of collective farms, which do not receive subsidies, prices are the sole source of compensation for production expenses and productive effort. Because collective farmers do not receive fixed money wages but are instead residual claimants to the net income of the collective farms (after precedent claims for material production expenses, taxes, investment, etc., have been satisfied), the level of procurement prices has a direct effect upon their incentives and thus their productivity and output.²⁶

Collective Farm Procurement Prices

1. *Objectives.* In setting agricultural procurement prices for collective farms, the Soviet government has pursued two conflicting objectives: (1) to fix the terms of trade for the collective farm peasantry so as to make it bear a large share of the burden of industrialization, and (2) to provide incentives to produce.

In the first case, the state has determined the terms of trade and real income of the peasantry through the relationship between agricultural procurement prices paid to the collective farms, on the one hand, and prices paid by the collective farms for material inputs and prices paid

²⁶ Since 1958 a small minority of collective farms has shifted to a wage basis, that is, full monthly payments at fixed rates for specific tasks or norms of production [56, p. 275]. Even under these circumstances, the level of procurement prices determines the level of wages which can be paid.

by collective farmers for consumer goods, on the other.²⁷ Because the collective farm peasantry would not voluntarily deliver at the terms of trade imposed by the state the quantities desired by the state—i.e., would not voluntarily pay the tax in kind levied by the state—a system of delivery quotas has been necessary to enforce these terms of trade. In addition to meeting the quotas fixed for deliveries at obligatory delivery prices (*tseny obyazatel'nykh postavok*), the collective farms were expected to fulfill “plans” for additional procurements at state purchase prices (*tseny gosudarstvennykh zakupok*). Although the latter were higher than the obligatory delivery prices, they were still below collective farm market prices, and hence sales at state purchase prices were in most cases not voluntary but compulsory [46, pp. 88-91]. In the case of raw material crops, the possibility of collective farm market sales does not exist.

In this light, the turnover tax on agricultural commodities, which accounts for the bulk of the difference between the procurement price paid to collective farms and the retail price charged final consumers, may be thought of as being borne in part by producers in the form of lower procurement prices and in part by consumers in the form of higher resale prices.

The Soviets have long justified procurement prices “below the value” of the commodity on the ground that this is the means by which the state is compensated for expenditures on behalf of the collective farm peasantry for irrigation, conservation, electrification, agricultural research, education and health measures, etc. [48, p. 61] [68, p. 223]. This view in effect interprets that part of the turnover tax borne by the collective peasantry as a charge for specific services rendered to production, together with a contribution to the financing of general welfare expenditures benefiting the peasantry. Another interpretation is that at least part of the turnover tax represents a payment by the collective farms for the use of their land. Although all land in the Soviet Union has been nationalized, it is used by producers without an explicit charge. Soviet writers acknowledge that the state seeks to capture at least part of the differential rent arising from differences in fertility, location, and extent of mechanization through a number of devices. These include regional variations in procurement prices, in obligatory delivery quotas, and (up to 1958) in rates for payments in kind for machine-tractor station (MTS) services, as well as direct taxes on collective farm income [62, p. 573]. The low level of procurement

²⁷ As one Soviet writer puts it: “In other words, purchase prices, besides their direct functional role as an instrument of accounts between the producers of agricultural products and the state, acquire significance as one of the important mechanisms of distribution of the national income between town and country” [65, p. 16].

prices (high rate of turnover taxation borne by the collective farm peasantry) thus represents in part a rent charge by the state as owner of the land and in part a tax imposed by the state to finance its expenditures, both those directly affecting collective farms and those of more general effect.²⁸

The second objective of agricultural procurement prices is, through their general level, to furnish incentives to collective farm peasants to produce agricultural output in general; and through their relative price structure, to furnish incentives to produce certain agricultural products in preference to others. It is evident that this second objective, which would be furthered by higher procurement prices, conflicts with the first one of collecting a tax in kind through low procurement prices. It constitutes an alternative approach to agricultural procurement, stressing price incentives rather than coercive quota demands as the means of securing food and agricultural raw materials from the peasantry.

Allowance for collective farm market sales results in a significant improvement in the peasantry's terms of trade and real income and a marked increase in its incentive to produce, because collective farm market prices have been much higher than state procurement prices [56, pp. 247-48] and because collective farm market sales represent an important share of total marketings, especially for individual peasant households [36, pp. 39, 44]. This is no doubt one of the reasons why the collective farm market has been tolerated by the Soviet state, despite its ideological incongruity. At the same time, it must be assumed that in fixing state agricultural procurement prices some allowance has been made, if only in an approximate and crude way, for the supplementation by collective farm market sales of the low prices paid on deliveries to the state. Cotton growers who could not sell part of their output on the collective farm market had to be compensated fully through state procurement prices, whereas grain and livestock producers were expected to augment their earnings from sales to state procurement agencies by sales, at higher prices, on the collective farm market [41, p. 856].

The interrelationships here are complex, however. While collective farm market prices have no doubt influenced state procurement prices, the converse is also true. The state policy in regard to the prices and quantities of agricultural procurements affects both the supply offered on the collective farm market and the demand on the collective farm market of urban consumers unable to satisfy their requirements at state stores from the state's agricultural procurements. State agricultural procure-

²⁸ It is another matter, however, to attempt to divide actual turnover tax collections among the rent charge and tax components. For a discussion of the problem, see, for example [11, pp. 82-85].

ment prices have been fixed after taking into account the prospects for collective farm market sales and the extent to which *average* realized prices (for food products) would therefore exceed state procurement prices.

2. *Price Policy since 1953.*²⁹ One of the first steps taken by Stalin's successors in 1953 was to embark on a broad program to increase agricultural output, involving changes in planning and administration, delivery requirements, taxes, investment, and prices.³⁰ The changes in agricultural procurement price policy included a large increase in the general level of prices, a revision in the relative price structure in favor of food crops, efforts to calculate costs and to relate prices to costs, and the unification of multiple prices into single procurement prices for each crop.

In 1953, obligatory delivery and above-quota purchase prices were increased sharply for most food products [56, p. 263] [65, p. 24]. In some cases, such as vegetables and potatoes, average realized prices were also raised by reductions in obligatory delivery quotas, which released more of the crop for sale at the higher state purchase and collective farm market prices [53, p. 195].³¹ The 1953 revisions, however, clearly were the result of hasty rule-of-thumb calculations.

The next round of price increases, in 1956, represented the initial response to the cost studies begun in 1955. Most procurement prices were increased again. In some cases the differential between the basic and the higher incentive price for a product was narrowed. For example, sugar beet base prices were raised roughly fourfold while the maximum premium price was reduced from 400 to 150 per cent of base [56, p. 265]. In the case of potatoes, the obligatory delivery price was increased by about 150 per cent and the above-quota purchase price by only 50 per cent [65, p. 17].

The major change in agricultural procurement prices occurred in 1958 in connection with the decision to abolish the MTS's and turn their machinery over to the collective farms. Multiple pricing was eliminated, and a new single state purchase price was fixed for each product. The new prices are supposed to be incentive prices adequate to cover average costs of production, including a reasonable compensation for collective farm labor, and to provide for "accumulation" (i.e., collective farm investment in fixed and working capital).

The general constraint upon the 1958 price increase, as stated by Khrushchev, was that the total bill to the state for procurements from

²⁹ For a discussion of agricultural price policy before 1953, see [46] [56].

³⁰ For a survey of the various measures, see [71].

³¹ Other minor incentive measures involved "return sales" and compensation for expenses of transportation from the farms to procurement points [53, pp. 201-3].

collective farms was not to increase—that is, that the new procurement bill was not to exceed the previous bill for deliveries plus the bill for MTS operations and investment [63, Jan. 25, 1958]. The desired level of turnover tax collections, out of the difference between agricultural procurement prices and state retail prices, also imposes a limit on the general level of agricultural procurement prices. Procurement price increases since 1953, in the face of reductions in retail prices in 1953 and 1954 and general stability in retail prices since then, have required reductions in the turnover tax rates on flour, meat, and sugar, and the elimination of turnover taxes on butter, potatoes, vegetables, and some meat products [68, p. 237]. Moreover, as a result of the 1958 procurement price increases, retail prices on vegetables were raised 10 per cent and on potatoes 8 per cent [65, p. 44]. Further agricultural procurement price increases thus would conflict with the present Soviet policy of maintaining a stable state retail price level.³²

The cost calculations underlying the 1958 prices are of some interest. The cost investigations begun in 1955 faced two kinds of difficulties [56, pp. 256-57] [68, pp. 216-21]. First, basic data were lacking, because the accounts of collective farms and MTS's were not set up to show accurately the expenditures for labor, machine operations, materials, etc., on individual products. There was no accounting category for depreciation. Labor inputs were measured not in money wage payments or even man-days, but in labor-days (*trudodni*), an accounting unit of effort which varied in significance from one product to another, from one farm to another, and from one year to the next. Second, there were conceptual difficulties in valuing machine operations of the MTS's and labor inputs of the collective farmers.

In the case of the former, the collectives made payments in kind for machine operations performed by the MTS's. Before the abolition of the MTS's in 1958, their services for collective farms were valued, in cost calculations for price revisions, either at operating costs (*sebestoimost'*) or in terms of the payments in kind made to the MTS's by the collective farms (variously valued at obligatory delivery prices, state purchase prices, or the farm's own cost of production of them). In comparing collective farm costs following the acquisition of the MTS machinery in 1958 with corresponding costs for earlier years, reported MTS operating costs in those years have been used.

In the case of collective farm labor inputs, payments were made in money and in kind, but the amounts paid in these two forms per labor-

³² " . . . the increase of purchase prices to that level at which it would be impossible to reduce retail prices further or, even more, it would be necessary to raise them, would be, from the point of view of Soviet price policy, inadmissible" [65, p. 18].

day unit earned by a collective farmer varied widely from one farm to another and from year to year on the same farm. Moreover, since payments for a labor-day were greater on the more successful farms, to use actual labor-day payments would have made it appear that the more efficient farms had higher costs! Clearly, for purposes of comparison, some fixed, notional value had to be assigned to labor inputs. The solution adopted was to value labor at state farm wage rates—a procedure which corresponds to the notion that state farms represent a model for collective farms.

The 1958 prices purported to cover average costs³³ of production and to provide for accumulation. A comparison of these prices with average collective farm costs in 1953-56 shows that they substantially exceed production costs of sugar beets, cotton, flax, and wool; slightly exceed production costs of grain, potatoes, and vegetables; and fall notably short of covering production costs of beef, pork, and milk [56, p. 269] [68, pp. 234-35]. The "average costs" considered in fixing these prices are thus not the actual average costs of the immediately preceding years but rather appear to be anticipated feasible costs in the (near?) future in regions from which quota deliveries are required. These are lower than average collective farm costs in the past for two reasons. First, quota deliveries have been eliminated or greatly reduced in exceptionally high-cost areas, and second, cost reductions are expected from the transfer of the MTS machinery to the collective farms.

The prices fixed in 1958 are described as both "stable" and "flexible." They are expected to remain basically unchanged for some time, but annual adjustments up or down will be made for exceptionally bad or good harvests, in order to keep the size of the total procurement bill approximately constant. Thus, a number of prices were reduced for the bountiful 1958 harvest, while potato prices were raised for the 1959 crop.³⁴ Prices will therefore tend to vary from year to year directly with cost, instead of inversely as under the former multiple price system.

The 1958 prices are also supposed to promote a rational pattern of regional specialization in agricultural production. Before 1958, regional differences received only token recognition. Although there was some regional variation in delivery quotas, MTS rates, and prices, the basic principle nevertheless was that every farm, regardless of natural conditions, should deliver some amounts of each of the basic

³³ Some Soviet economists proposed basing prices not on average cost but on cost on marginal land—a suggestion rejected on the ground that it would remove the pressure for cost reductions imposed by average-cost pricing [68, p. 235].

³⁴ For the 1958 crop, the percentage reductions from the "stable" prices were as follows: grain, 13; sunflower seed, 15; sugar beets (unirrigated), 10; and potatoes, 10. The potato price increase in 1959 was 10 per cent [65, p. 25].

food crops—grain, potatoes, vegetables, meat, and milk. Since the prices for these crops failed to cover cost, this principle was in effect a method of requiring all farms to bear part of the burden of the tax in kind. The general principle underlying the regional differentiation of the 1958 prices appears to be that price should be higher in the higher-cost regions, but that the margin of “profit” above cost should be higher in the lower-cost regions. This policy endeavors to secure a continued and perhaps expanded flow of output from the higher-cost regions while providing the greatest incentives (and means) for expansion of output to the lower-cost regions. It is hoped that future growth of output in the latter will eventually make it possible to curtail procurements from high-cost regions and thereby to reduce average costs and hence procurement prices [56, pp. 267-68].³⁵

An appraisal of agricultural procurement price policy since 1953 thus shows clearly a shift to a policy of providing incentives to expand agricultural output. The over-all level of agricultural procurement prices was sharply increased after 1952, while prices of manufactured producer and consumer goods bought by collective farms and individual peasants were reduced, as a result of general reductions in wholesale prices of producer goods in 1955 and in retail prices in 1953 and 1954.³⁶ Although precise calculations of the terms of trade cannot be made from available data, it is clear that they have improved substantially as a result of these price trends.

What is perhaps even more significant is that an effort is now made to set prices on the basis of, or at least with some recognition of, costs.³⁷ However, a comparison of relative prices and relative costs shows that technical crops still enjoy a favored position compared to food crops and that price still fails to cover cost for meat and milk production. The latter reflects the Soviet government’s unwillingness, for internal political reasons, to raise retail prices on these products. The inadequacy of meat and milk prices—together with the still rather low prices for grain, needed for livestock feed—also helps to explain the failure of Soviet agriculture to achieve meat and milk targets during the first few years of the seven-year plan (1959-65) [43, pp. 220-

³⁵ Regional and seasonal price differences are discussed at length in [68, pp. 258-77].

³⁶ Furthermore, since 1958, the collective farms have been permitted to buy at wholesale prices various goods previously sold to them at retail prices, such as motor vehicles, fuel, and hardware [68, p. 239].

³⁷ In addition, price relationships in pre-Revolutionary Russia and price relationships abroad are also reported to be considered in fixing relative prices. “In the process of working out drafts of the new purchase prices, there was submitted to the corresponding government commissions much statistical material about average current procurement-purchase prices for individual products of agriculture relative to each other, and also relative to prices prevailing in 1913 and prevailing in foreign countries at the present time” [65, p. 20].

27]. Thus, although the 1958 prices do represent a significant advance in the use of price incentives, the principle has not been fully applied to livestock producers.

Another objective of the price revisions of 1953-1958 was to reduce the marked inequality in income distribution within the collective farm sector. Due to these revisions, the income of food crop producers improved relative to that of technical crop producers, the disparity in income between the more and the less efficient farms was diminished, and—as a result of these two developments—regional differences in incomes were reduced.

Finally, the increase in collective farm money income has made possible both a large increase in money payments for collective work and a limited shift, on a minority of farms, from residual payments for labor-days to regular monthly wage payments at specified rates. The shift to wages, as part of the program of incentives, will surely tend to increase labor productivity on collective tasks.³⁸ It appears that, with a policy of “stable” agricultural procurement prices, primary reliance will be placed on increases in productivity and reductions in costs from this and other sources (such as the control by the collective farm chairman of the machinery used on the farm) to secure yield increases. Nevertheless, the increased attention of Soviet price-planners to the relationship of prices and costs suggests that further revisions in agricultural procurement prices may be made, subject to constraints imposed by retail price policy, to stimulate the production of lagging crops.

III. Retail Prices

There are two principal types of retail prices at which goods are sold to households in the Soviet Union: state retail prices and collective farm market prices.

State Retail Prices

The state retail price (*gosudarstvennaia roznichnaia tsena*) is charged by state retail stores, consumer cooperative stores, and state and cooperative establishments providing services, such as restaurants, dry-cleaning shops, theaters, etc.³⁹ The consumer cooperatives, which

³⁸ In the opinion of Nimitz [56, p. 275]: “The significance of this trend for labor productivity can hardly be overestimated. Under a wage system using piece rates, the relation between individual effort and reward is direct and certain. When participants share in an uncertain total, the individual incentive to intensify effort is reduced.”

³⁹ Health and education services are, with minor exceptions, provided free of charge. Although a price (rent) is charged in the case of housing, it is recognized not to cover “cost” and which is not intended to demand and clear the market. This explains why housing and utilities (electricity, gas, etc.) constitute only 4-5 per cent of the budgets of

operate primarily in rural areas, are closely supervised by the state, which determines their number, size, location, staff, etc.; allocates goods to them; and establishes sales plans for them. Of total state, cooperative, and urban⁴⁰ collective farm market sales in 1959, the respective percentage shares of the three types were 66.0, 29.3, and 4.7 [67, p. 636].

1. *Objectives.* State retail prices supposedly are fixed with the aim of clearing the market both in aggregate terms and for each commodity. In aggregate terms, the objective is to set the general level of state retail prices so that the total retail sales at that price level will absorb the money income which the population is expected to spend at state retail outlets. For individual goods, the objective is to fix the price of each at a level which equates planned supply and expected demand [48, pp. 159-60].

Soviet planners are reported to fix the general level of state retail prices by comparing two planning "balances," the balance of money incomes and expenditures of the population and the balance of sources and uses of consumer goods and services. The former includes the various sources of money income (wages, pensions, money incomes of collective farmers, etc.) and its disposition (among expenditures on goods and services, direct taxes, bond subscriptions, deposits in savings banks, etc.) The latter compares the several sources of supply of consumer goods (current production, various types of inventories, and imports) and the distribution of this supply (sales to the population, inventories, the armed forces and other state agencies, and exports). From these balances, the planners determine the price level at which planned supplies must be sold to absorb the amounts which households are expected to desire to spend on retail purchases [53, pp. 150-53].

The general level of retail prices depends upon both tax and wage policies. The Soviet government relies primarily on price-increasing taxes—namely, the turnover and profits taxes—to finance investment, defense, and social services. As a result, the general retail price level is higher than it would be if direct taxes were used to a greater extent. Planned increases in private consumption can be distributed among households by reducing retail prices or by increasing money incomes (or by a combination of the two). The first method distributes the increase in consumption among the population as a whole

p. 420]. For a discussion of the multiple state retail price system used in connection with rationing from 1929 to 1936 and during the Second World War, see, respectively, [8, pp. 236-39, 251-52] [72, pp. 72-77].

⁴⁰ Statistics on rural collective farm market sales are not included in published Soviet trade statistics.

(although all consumers may not benefit to the same degree because of differences in the extent to which individual prices are reduced, differences in money incomes, differences in consumption patterns, etc.). The second method, however, is potentially much more selective and discriminatory. With stable retail prices, money wages of different segments of the population can be increased by different degrees (and at different times) to provide selective incentives for increased productivity and for occupational and geographical shifts. Since the Second World War, both methods have been used in turn in the USSR. From 1948 through 1954, retail prices were reduced each spring [18]. Since 1954, the state retail price level has been kept relatively stable, while the money incomes of particular segments of the population have been raised by increases in agricultural procurement prices, pensions, minimum wages, and the wages of selected occupations (e.g., coal miners).

In pricing individual goods so as to clear the market, the planners are reported to consider the cross-elasticities of demand for substitute and complementary goods [53, p. 154]. Under planners' sovereignty in the USSR, the basic mechanism of adjustment to a disequilibrium in the market for a particular good is to adjust demand to supply, in contrast to the adjustment of supply to demand which characterizes the response to consumers' sovereignty. The latter kind of adjustment occurs in the USSR only to a limited extent when, in response to evidence in the form of shortages or surpluses at the prevailing prices, planners modify the composition (types, models, etc.) of the output of the various kinds of consumer goods which can be produced with the resources which they have allocated to those lines of production.

In addition to the fundamental objective of clearing the market, retail prices on individual commodities are also set with other objectives, some of which tend to conflict with the basic objective. One such additional objective, arising from administrative considerations, is to keep prices unchanged (except for authorized seasonal variations) for long periods of time. It is obvious that this goal conflicts with the aim of balancing demand with supply.

Another objective is to make the distribution of real income less unequal than the distribution of money income, by fixing lower prices for mass consumption goods (e.g., basic foodstuffs) which predominate in the budgets of lower-income groups, and higher prices for goods (e.g., consumer durables and luxury foodstuffs) which are relatively more important in the budgets of higher-income groups.⁴¹ In pursuit of this objective, prices of basic food products have deliberately been set and maintained below the equilibrium level, as persistent shortages attest

⁴¹ Thus the turnover taxes responsible for the relatively higher prices of the latter goods are in effect progressive.

[68, pp. 11-12, 66]. Thus, the informal rationing of queues and empty shelves helps to modify the distribution of real income from the initial distribution of money income.

Relative prices are also used to pursue other objectives of social policy. Low prices are set on books, to promote indoctrination and education, and on children's apparel, to aid large families, while high prices are intended to curb the consumption of vodka. In order to discourage home or handicraft production, relatively low prices are set on finished goods, such as baked bread and sewn articles, and relatively high prices on component materials, such as flour and cloth.⁴²

The turnover tax, which provides 40-45 per cent of total budget revenue [67, p. 802], is the principal device used by the planners to secure the desired level and structure of retail prices. The principal components in the state retail price of a commodity are (1) the enterprise wholesale price (or the agricultural procurement price plus the mark-up of the procurement agency), (2) the turnover tax, (3) the wholesale trade margin, and (4) the retail trade margin. In addition, there are transportation charges. The several margins are intended to cover expenses and provide a profit at the respective stages. The shares of enterprise wholesale prices, turnover taxes, and the two trade margins in the total value of state retail sales in recent years may be estimated, respectively, at approximately 50, 40, and 10 per cent [67, pp. 637, 669-75, 799]. Their relative importance in the prices of individual goods differs markedly, however, precisely because of the use of the turnover tax to fix the retail price at the desired level. The sum of the enterprise wholesale price and the trade margins provides a floor below which the retail price should not be set but does not determine what the retail price should be. Instead, given the objective of equating demand with supply (or an alternative objective), the appropriate retail price is obtained by levying a turnover tax of the necessary amount.

The turnover tax serves as a cushion which separates the retail prices paid by households and the wholesale prices received by producing enterprises in industry and agriculture. It permits the planners to alter consumer prices without altering producer prices correspondingly, and vice versa. Thus, retail price reductions need not be accompanied by wholesale price reductions, but may be made at the expense of the turnover tax. The turnover tax separates not only the levels but also the structures of producer and consumer prices, since the different rates of taxation on different goods cause their relative retail prices to differ from their relative wholesale prices.

⁴² For a discussion of problems in fixing the relative prices of specific goods and groups of goods, see [68, pp. 423-53]. For a discussion of regional, seasonal, urban-rural, and other variations in the price of a given good, see [68, pp. 459-86].

2. *Evaluation.* How successfully do state retail prices perform their basic functions of absorbing household money income and of equating demand and supply of individual goods? Certainly, the theoretical principle that these prices should be market-clearing scarcity prices rather than prices based only on cost (as in the case of industrial wholesale prices) is sound. Likewise, the principle that prices should adjust demand to supply, rather than the converse, is consistent with the Soviet concept of planners' sovereignty. Hence the question becomes: How faithfully in practice have Soviet planners implemented these principles? They could not reasonably be expected to achieve equilibrium in the markets for all commodities at every point in time—a feat not attained in free-enterprise economies either. To do this would require almost continuous adjustment of prices, which is not feasible under the highly centralized administration of the Soviet economy. Instead, a more reasonable objective would be to achieve an approximate equilibrium for most goods over a planning period of, say, a year or three or six months. Small disequilibria, between periodic price adjustments, could be met by the depletion or accumulation of inventories (except in the case of services).

However, this is not the approach which Soviet planners have taken. The persistence of shortages (and the unofficial rationing of empty shelves) of many, perhaps most, consumer goods for long periods after the abolition of rationing in 1947⁴³ indicates that the general level of retail prices (i.e., turnover taxation) has been too low relative to the level of wages and other money incomes. The result has been repressed inflation, except to the extent to which the excess purchasing power in the state retail trade sector has found an outlet in the collective farm market. Instead of rationing by a physical allocation system or by the price system, insufficient supplies (at the prevailing prices) have been rationed through such inefficient mechanisms as the queue and influence with shop personnel.

Why has the Soviet government preferred repressed inflation and such rationing mechanisms to an equilibrium price level? One explanation offered by Soviet writers is that shortages stimulate labor productivity because they show that supplies and production are not adequate. This argument is not convincing, however, since high prices would indicate the need for increasing output of consumer goods just as effectively as shop shortages [18, pp. 621-22]. Another reason might be the desire to minimize inventories, which is achieved by low prices which cause shortages to be typical of Soviet retail trade [18, p. 622].

Perhaps the most likely explanation is related to the income distribution objectives discussed above. Just as formal rationing was used in

⁴³ Evidence of widespread and persistent shortages at prevailing prices is provided by the Soviet press. See [18] and almost any issue of the *Current Digest of the Soviet Press*.

the 1930's and 1940's to assure supplies of food, clothing and other basic consumer goods to lower-income groups, so in the 1950's informal rationing devices have been relied upon to enable them to obtain goods which they would be unable to buy at equilibrium prices. Higher-income groups able to pay the higher prices on the collective farm market can thereby avoid the frustration of queues and empty shelves, at least in so far as many food products are concerned. The Soviet leaders evidently prefer this method of rationing, as a means to secure what they regard as a more equitable distribution of scarce goods, to formal rationing, which they apparently consider inappropriate in peacetime, and to a major revision of the distribution of money income, which would have serious implications for incentives. Of course, it could also be argued that shortages were regarded by the Soviet leaders and planners as temporary, and that they expected the supply of goods to "grow up" to the price level in the course of a comparatively few years. It is true that the importance of this informal rationing mechanism has declined since 1954, as supplies of consumer goods have increased, largely as a result of the increase in agricultural production, while the general level of retail prices has remained stable and the wages of lower-income groups have been raised, both in absolute terms and in relation to those of higher-income groups.

The shortages which result from retail prices below the equilibrium level also conceal errors in relative prices which would be evident if the general retail price level were closer to equilibrium. Relative prices become significant only when they correspond to choices which are actually available to consumers. However, when the value of goods offered for sale does approach equality with the intended expenditure of the population, both shortages and surpluses are likely to occur because of errors in relative pricing. The existence of such shortages and surpluses in turn prevents the attainment of general equilibrium, since, under Soviet conditions, prices (or production) are not promptly altered to eliminate disequilibria.

It is not surprising that errors should occur in the fixing of relative prices. One source of error is inaccurate estimates of expected supplies. Supply estimates based on ambitious production targets in agriculture and light industry are likely to prove overly optimistic. In addition, as already noted, the assortment plan for the composition of output is often sacrificed by enterprise managers in order to achieve the gross output and profit targets. This in turn reflects the divorce, by the differentiated turnover tax, of the structure of enterprise wholesale prices from the structure of retail prices: the scarcest goods are not always those which contribute most to the gross value of output or those which are the most profitable to produce.

A second source of error is in the inaccurate estimates of demand.

It is true that for many years information has been collected about family budgets, the structure of retail sales, and price movements on the collective farm market [53, p. 153]. However, demand analysis is as yet a relatively undeveloped branch of Soviet economic science. This reflects the emphasis of Soviet planners on goals other than consumer satisfaction, and the below-equilibrium pricing and widespread shortages of basic consumer goods in the past. Under such conditions, it was not considered important to estimate elasticities of demand with precision.

There have been comparatively few adjustments of relative prices, chiefly involving consumer durables, since 1954, although Soviet writers have criticized the price reductions of 1948-54 as too "automatic" and "mechanical," because they involved uniform percentage reductions for broad categories of goods, without sufficient regard for the relative scarcities of goods or for prices of substitute and complementary goods [48, p. 163] [68, p. 457-59]. It is possible that the limited decentralization in 1957 of the responsibility for setting retail prices may lead to more flexible state retail prices, at least for the goods whose prices are no longer fixed centrally.⁴⁴

However, there are several factors which tend to make many frequent price adjustments unlikely. One is the administrative cost of making such changes under a highly centralized system of economic administration. Another is the impact of retail price changes on the distribution of real income, which the Soviet leaders regard as a political question of primary importance: changes in the prices of bread, meat, and other basic consumer goods are the result of high-level political decisions, not merely of comparisons of expected supply and demand at the technicians' level. Finally, it is through retail prices that the chief source of Soviet budget revenue, the turnover tax, is collected. Changes in retail prices therefore involve fluctuations and uncertainty in tax collections.

Collective-Farm Market Prices

The collective-farm market price (*tsena kolkhosnovo rynka*⁴⁵) of a good is determined by supply and demand in the individual collec-

⁴⁴ Before March 1957, the goods whose prices were fixed by the central authorities in Moscow accounted for more than 90 per cent of total state and cooperative retail trade, while the authorities at the union republic and lower levels fixed the prices on the remainder. In March 1957, the latter were given responsibility for setting prices on a larger list of goods, accounting for about 45 per cent of total sales. However, the central authorities in Moscow retain responsibility for fixing the prices of such important goods as bread, meat, fish, butter, textile cloth, footwear, knit goods, tobacco, vodka, and most durables. The union republic and lower authorities set prices for sausage and confectionery articles, eggs, milk, sewn goods, furniture, toys, and nonalcoholic beverages [68, pp. 475-79].

⁴⁵ Alternatively, *tsena kolkhosnoi bazarnoi i yarmachnoi torgovli* (price of collective farm bazaar and fair trade).

tive-farm markets, varying from market to market and from day to day in the same market. There are about 8,000 collective-farm markets, approximately half of them in towns of various sizes and half in rural areas. The markets occupy designated trading areas and are equipped with a varying number of stalls, benches, tables, storage bins, meat and milk control points, etc. Sellers are charged a small daily fee for the right to offer their wares. Half a million peasants are reported to participate in the markets daily.⁴⁶

Although urban collective-farm market sales were only 4.7 per cent of total state, cooperative, and urban collective-farm market sales in 1959, their importance in Soviet retail trade is greater than this relationship suggests. First, collective-farm market trade consists almost exclusively of food products, while these account for only 45 per cent of state and cooperative trade. Thus, the share of urban collective-farm market trade in total food sales of these ~~three~~ marketing channels was 7.9 per cent in 1959. Second, the collective-farm market deals in a narrower range of food products than state and cooperative outlets. In relation to total trade of the three channels in the same food goods, the collective-farm market share in 1959 was 14.7 per cent. Finally, it would be desirable to compare the urban collective-farm market figure directly with the amount of *urban* state and cooperative trade in the same goods. Data are not available for this comparison for the Soviet Union as a whole. However, a special survey of 25 large cities in 1958 showed that the collective-farm market share in such a comparison was less than 20 per cent in 7 cities, between 20 and 30 per cent in 5, between 30 and 40 per cent in 8, and over 40 per cent in 5 cities. In the last group were the important cities of Odessa, Tbilisi, Rostov-on-Don, Baku, and Tashkent [9].

Although collective-farm market prices are set by supply and demand, both supply and demand are strongly influenced by the state. The demand depends on the extent to which the state retail-trade network is able, with available quantities at the established prices, to satisfy the effective demand of households—i.e., on the excess purchasing power remaining after household expenditures in the state retail trade sector. The supply offered by agricultural producers (collective farms, collective and state farm peasants, and urban workers with garden plots) depends on the size of the deliveries which they are required to make to state procurement agencies and the prices offered by these agencies.

Despite its ideological heterodoxy, the collective-farm market performs several useful functions in the Soviet economic system. On the one hand, it provides an outlet through which some inflationary pres-

⁴⁶ For a discussion of the collective farm market, with particular reference to trends in government policy toward it, see [75].

sure can escape. Although excess demand cannot drive up state retail prices, it can and does raise collective-farm market prices to a market-clearing level. On the other hand, as noted in Section II, the prospect of sales in the collective-farm market at prices above those offered by state agricultural procurement agencies provides an additional and important incentive to agricultural producers to expand output and marketing.

Both of these effects are considered by Soviet planners in fixing the levels and structures of state retail prices and of agricultural procurement prices. The levels of both kinds of prices are lower than they would be in the absence of a collective-farm market to absorb some of the effects of low state retail prices and to offer peasants additional incentives. Likewise, the structure of state retail prices takes into account the availability of certain goods (e.g., raw food products but not clothing) in the collective-farm market, while the structure of agricultural procurement prices takes into account the possibilities for selling certain goods (e.g., meat and vegetables but not cotton) in the collective-farm market. Finally, as a result of the transfer of purchasing power from urban workers to peasants through collective-farm market sales, the structure of demand in the state and cooperative retail trade network is altered, since the goods bought by the two groups differ.

The difference between the collective-farm market price level and the state retail price level has been declining in recent years. A sample for 101 large cities shows that, for major food products sold in the collective-farm market, prices were 31 per cent above the state retail price level in 1959, compared to 45 per cent above in 1956 [66, pp. 773-74] [67, pp. 680-81].⁴⁷ The large difference between the two price levels clearly reflects the substantial extent of below-equilibrium pricing in state retail stores, although in part it also reflects a premium paid for the better quality and freshness of products in the collective-farm market. The decline in the difference between the two price levels over this period appears to be due primarily to the increased availability of goods in state stores and a corresponding easing of demand in the collective-farm market, leading to a smaller quantity of goods being sold at lower prices there [67, p. 709]. Differences between collective-farm market and state retail prices (aside from those due to differences in quality, ease of making purchases, etc.) will disappear only when state retail prices are fixed at equilibrium levels, as a result of increases in state retail prices or in supplies relative to house-

⁴⁷ These relationships do not in themselves provide a reliable indicator of the extent of repressed inflation, however, because they do not take into account the volume of sales in each trade channel and because some of the excess purchasing power of households after state retail purchases is involuntarily saved rather than spent on the collective farm market. On the first point, see [38, p. 170].

hold money incomes. Until then, the collective-farm market may be expected to continue to perform its useful, if ideologically unorthodox, functions.

The state's recognition of this is indicated by its promotion of the commission-trade form of collective-farm market trade. Since 1953, consumer cooperatives have carried on a form of collective-farm market trade in which they act as agents for collective farms and farmers, selling their surpluses for them in the collective farm market for a commission of about 10 per cent [67, p. 708].⁴⁸ In 1959 these commission sales constituted one-fifth of total collective-farm market sales [67, p. 708].

The commission-trade price (*tsena komissionoi torgovli*) of a good is set by the consumer cooperatives on the basis of the prevailing collective-farm market price but always substantially (on the average, 17 per cent) below it. However, commission prices on the average have exceeded the state retail prices for the same goods by about 10 per cent [67, pp. 680-81]. The objectives of the commission trade appear to be to exert pressure on the level of collective-farm market prices and to reduce the amount of time and effort which collective farmers devote to marketing, rather than producing, agricultural output.

IV. Conclusions

What can be concluded from the preceding analysis about the rationality of the Soviet price system? This depends on the concept of "rational prices." At least three concepts can be distinguished:

1. According to Mises, Hayek, and others, rational prices are those determined by consumer sovereignty in a competitive free-enterprise market economy [10, pp. 445-46]. It is clear that by this criterion Soviet prices are not rational.

2. Another concept of rational prices is that they are scarcity prices, i.e., prices which equate supply and demand. Under socialism, such prices could be determined in a decentralized manner by the interplay of the supply and demand of socialist firms and households, or they could be determined in a centralized way by the planners [21, pp. 55-60]. In the latter case, the pertinent demands might correspond to either consumers' or planners' preferences. The planners might strive for *consumer satisfaction*, as distinct from consumer sovereignty, or they might wholly or partly substitute their preferences for those of consumers [10, p. 442] [21, pp. 69-74]. In both cases, equilibrium prices would be relied upon to allocate scarce resources to achieve the ends posited by the ruling preferences. However, while prices can be set to equate supply with demand according to planners' preferences,

⁴⁸ A somewhat similar arrangement existed from November 1946 to August 1949 [68, p. 59].

these preferences cannot themselves be based on an independent calculation of opportunity costs, as reflected in independently determined scarcity prices, since the scarcity prices in use are themselves fixed on the basis of planners' preferences. Instead, the planners' preferences must be formulated on the basis of other economic and political considerations.⁴⁹

By the test of market-clearing prices, Soviet state retail prices are rational at least in principle if not completely in practice, and collective-farm market prices surely are rational. However, agricultural procurement and industrial wholesale prices are not rational, in view of the planners' reliance on delivery quotas in connection with the former and physical allocations in connection with the latter.

3. A third concept of rational prices is that they are prices which perform effectively whatever functions are assigned to them. These functions may include some or all of the following: allocation of resources, provision of incentives, control of enterprise managers, distribution of income, and the implementation of various social policies. For some of these functions, for example control of managerial behavior, rational prices may not need to be scarcity prices. On the other hand, scarcity prices may be used to implement decisions which are not based on scarcity prices, for example, when market-clearing retail prices are used to distribute consumer goods produced as a result of physical planning. Thus, one part of the price system may consist of scarcity prices and another not. Yet both kinds of prices (and the system as a whole) will be rational as long as each set of prices accomplishes whatever the planners desire of it. Ward has called such prices "rational realization prices" [74, p. 140].

How rational are Soviet prices according to this concept, which is essentially that of the Soviet planners themselves? Although industrial wholesale prices are not scarcity prices, they still perform reasonably well their major function of control and evaluation of plan fulfillment. However, because they are not scarcity prices they are not appropriate for even the limited use made of them in resource-allocation decisions by planners and enterprise managers. Hence, according to this concept of rationality, industrial wholesale prices are irrational. Nor can agricultural procurement prices be judged rational by this standard, since they have not evoked the desired supply of agricultural output nor successfully allocated resources among crops within agriculture. Not until 1958 was an effort made to relate agricultural procurement prices to costs, and this relationship is still very imperfect.

⁴⁹ This problem has been identified as the "dilemma" of central planning by Eucken, Montias, and Balassa in their respective studies of the Nazi German [27], Polish [55, pp. 486-87], and Hungarian [6, p. 95] economies.

It is more difficult to assess the rationality of state retail prices. They are in general still (though since 1954 progressively less) below the equilibrium level at which they are supposed to be set. In some cases, for example basic foodstuffs, this appears to be the result of the pursuit of another objective—a deliberate policy of underpricing to affect the distribution of real income. However, a similar justification does not appear to apply in the case of luxury consumer durables, some of which, such as automobiles, are underpriced, while others, such as cameras and watches, are overpriced. Hence, state retail prices cannot be considered completely rational either.

The irrationality of Soviet agricultural procurement prices and state retail prices has been reduced somewhat by price revisions in the past few years. Reform of the price system, especially industrial wholesale prices, has been the subject of intensive discussion among Soviet economists since 1956. The reappraisal of Soviet prices results from the search of the Soviet leaders for ways to increase the efficiency with which available resources are used. The pressure for greater efficiency comes from many sources, including the increasing complexity of choice in a growing and diversifying economy; the higher priority for consumption, formerly the residual sector which absorbed the effects of planning errors; and the effort to devise a sensible pattern of specialization and trade within the Soviet bloc on the basis of comparative costs.

The proposals for reform in industrial wholesale prices range from suggestions for modest changes in the relative prices of selected substitute raw materials to sweeping proposals that the planners use shadow prices which incorporate charges for nonlabor factors and which reflect relative scarcities.⁵⁰ It will therefore be of great interest to see how far the general revision of industrial wholesale prices to be undertaken in 1961-62 goes toward fixing scarcity prices on the basis of which value planning can be assigned a major role in the direction of the Soviet economy.

REFERENCES

1. D. A. ALLAKHVERDIAN, *Natsional'nyi dokhod SSSR* (The National Income of the USSR). Moscow 1958.
2. E. AMES, "The Exchange Rate in Soviet-Type Economies," *Rev. Econ. Stat.*, Nov. 1953, 35, 337-42.
3. A. ARAKELIAN, *Khozraschet v promyshlennosti SSSR* (Business Calculation in the Industry of the USSR). Moscow 1956.

⁵⁰ A review of this discussion is beyond the scope of this paper. Two Soviet symposia on price policy are [79] and [80]. For a summary of the discussion which emphasizes the ideological aspects, see [81]. For a review of the proposals of Kantorovich for planning based on scarcity shadow prices, see [73].

4. A. Z. ARNOLD, *Banks, Credit, and Money in Soviet Russia*. New York 1937.
5. A. V. BACHURIN, "Biudzhët sovetskovo gosudarstva i zadachi uvelichenia vnutrikhosiaistvennykh nakoplenii" (The Budget of the Soviet State and the Tasks of Increasing Accumulation within the Economy), in *Voprosy sotsialisticheskoi ekonomiki* (Problems of Socialist Economics), Moscow 1956.
6. B. A. BALASSA, *The Hungarian Experience in Economic Planning*. New Haven 1959.
7. P. BARTON, "The Current Status of the Soviet Worker," *Prob. of Communism*, July-Aug. 1960, 9, 18-27.
8. A. BAYKOV, *The Development of the Soviet Economic System*. New York 1947.
9. I. BELYAYEVSKII, "On Indices of Collective Farm Market Trade," *Current Digest of the Soviet Press*, Mar. 29, 1961, 13, 14-16; transl. from *Vestnik Statistiki*, Dec. 1960, 12, 52-58.
10. A. BERGSON, "Socialist Economics," in *A Survey of Contemporary Economics*, Vol. I (H. S. Ellis, ed.), Homewood, Ill. 1958, pp. 412-48.
11. —, *Soviet National Income and Product in 1937*. New York 1953.
12. —, *The Structure of Soviet Wages*. Cambridge, Mass. 1944.
13. J. S. BERLINER, *Factory and Manager in the USSR*. Cambridge, Mass. 1957.
14. M. M. BOBER, "Marx and Economic Calculation," *Am. Econ. Rev.*, June 1946, 36, 344-57.
15. M. Z. BOR, *Planovyi balans narodnovo khoziaistva SSSR* (Plan Balance of the National Economy of the USSR). Moscow 1959.
16. M. BORNSTEIN, "The Reform and Revaluation of the Ruble," *Am. Econ. Rev.*, Mar. 1961, 51, 117-23.
17. E. C. BROWN, "The Soviet Labor Market," *Indus. and Lab. Rel. Rev.*, Jan. 1957, 10, 179-200.
18. C. D. CAMPBELL AND R. G. CAMPBELL, "Soviet Price Reductions for Consumer Goods 1948-1954," *Am. Econ. Rev.*, Sept. 1955, 45, 609-25.
19. R. W. CAMPBELL, "Soviet Accounting and Economic Decisions," in *Value and Plan* (G. Grossman, ed.), Berkeley 1960, pp. 76-94.
20. R. I. DICKEY, ed., *Accountants' Cost Handbook*, 2nd ed. New York 1960.
21. M. DOBB, *On Economic Theory and Socialism*. London 1955.
22. —, *Soviet Economic Development since 1917*, 4th ed. London 1957.
23. W. EASON, "Comparison of the United States and Soviet Economies: The Labor Force," in *Comparisons of the United States and Soviet Economies*, Joint Economic Committee, 86th Cong., 1st sess., Washington 1959, Part I, pp. 73-93.
24. *Ekonomicheskaiia effektivnost' kapital'nykh vlozhenii i novoi tekhniki* (Economic Effectiveness of Capital Investments and New Technique). Moscow 1959.
25. *Ekonomicheskaiia Gazeta*, June 28, 1960.
26. V. ERLICH, "Comments," in *Value and Plan* (G. Grossman, ed.), Berkeley 1960, pp. 66-69.

27. W. EUCKEN, "On the Theory of the Centrally Administered Economy: An Analysis of the German Experiment," *Economica*, May and Aug. 1948, 15, 79-100, 173-93.
28. J. G. GLIKSMAN, "Recent Trends in Soviet Labor Policy," *Mo. Lab. Rev.*, July 1956, 79, 767-75.
29. D. GRANICK, *Management of the Industrial Firm in the USSR*. New York 1954.
30. —, "An Organizational Model of Soviet Industrial Planning," *Jour. Pol. Econ.*, Apr. 1959, 67, 109-30.
31. G. GROSSMAN, "Industrial Prices in the USSR," *Am. Econ. Rev.*, Proc., May 1959, 49, 50-64.
32. —, "Scarce Capital and Soviet Doctrine," *Quart. Jour. Econ.*, Aug. 1953, 67, 311-43.
33. —, "Soviet Agriculture Since Stalin," *Annals of Am. Acad. of Pol. and Soc. Sci.*, Jan. 1956, 303, 62-74.
34. —, "Suggestions for a Theory of Soviet Investment Planning," in *Investment Criteria and Economic Growth*, Cambridge, Mass. 1955, pp. 91-115.
35. D. R. HODGMAN, "Soviet Monetary Controls Through the Banking System," in *Value and Plan* (G. Grossman, ed.), Berkeley 1960, pp. 105-24.
36. O. HOFFDING AND N. NIMITZ, *Soviet National Income and Product, 1949-1955*, RAND RM-2101. Santa Monica 1959.
37. F. D. HOLZMAN, "Some Financial Aspects of Soviet Foreign Trade," in *Comparisons of the United States and Soviet Economies*, Joint Economic Committee, 86th Cong., 1st sess., Washington 1959, Part II, pp. 427-43.
38. —, "Soviet Inflationary Pressures, 1928-1957: Causes and Cures," *Quart. Jour. Econ.*, May 1960, 74, 167-88.
39. H. HUNTER, "Costs, Freight Rates, and Location Decisions in the USSR," in *Value and Plan* (G. Grossman, ed.), Berkeley 1960, pp. 322-37.
40. —, *Soviet Transportation Policy*. Cambridge, Mass. 1957.
41. N. JASNY, "The Soviet Price System," *Am. Econ. Rev.*, Dec. 1950, 40, 845-63.
42. —, *The Soviet Price System*. Stanford 1951.
43. D. G. JOHNSON AND A. KAHAN, "Soviet Agriculture: Structure and Growth," in *Comparisons of the United States and Soviet Economies*, Joint Economic Committee, 86th Cong., 1st sess., Washington 1959, Part I, pp. 201-37.
44. N. KAPLAN, "Investment Alternatives in Soviet Economic Theory," *Jour. Pol. Econ.*, Apr. 1952, 60, 133-44.
45. —, *The Law of Value and Soviet Economic Planning*, RAND RM-488. Santa Monica 1950.
46. J. KARCZ, *Soviet Agricultural Marketings and Prices, 1928-1954*, RAND RM-1930. Santa Monica 1957.
47. T. S. KHACHATUROV, *Osnovy ekonomiki zheleznodorozhnovo transporta* (Foundations of the Economics of Railroad Transportation). Moscow 1946.
48. D. D. KONDRASHEV, *Tsenoobrazovanie v promyshlennosti SSSR* (Price Formation in the Industry of the USSR). Moscow 1956.

49. A. D. KURSKII, *Ekonomicheskie osnovy narodnokhoziaistvennogo planirovaniia v SSSR* (Economic Bases of National Economic Planning in the USSR). Moscow 1959.
50. O. LANGE AND F. M. TAYLOR, *On the Economic Theory of Socialism* (B. E. Lippincott, ed.), Minneapolis 1938.
51. A. P. LERNER, *The Economics of Control*. New York 1944.
52. H. S. LEVINE, "The Centralized Planning of Supply in Soviet Industry," in *Comparisons of the United States and Soviet Economies*, Joint Economic Committee, 86th Cong., 1st sess., Washington 1959, Part I, pp. 151-76.
53. L. MAIZENBERG, *Tsenoobrazovanie v narodnom khoziaistve SSSR* (Price Formation in the National Economy of the USSR). Moscow 1953.
54. J. M. MONTIAS, "Planning with Material Balances in Soviet-Type Economies," *Am. Econ. Rev.*, Dec. 1959, 49, 963-85.
55. —, "Price-Setting Problems in the Polish Economy," *Jour. Pol. Econ.*, Dec. 1957, 65, 486-505.
56. N. NIMITZ, "Soviet Agricultural Prices and Costs," in *Comparisons of the United States and Soviet Economies*, Joint Economic Committee, 86th Cong., 1st sess., Washington 1959, Part I, pp. 239-84.
57. A. NOVE, "'1926/7' and All That" *Soviet Stud.*, Oct. 1957, 9, 117-30.
58. —, "The Politics of Economic Rationality—Observations on the Soviet Economy," *Soc. Res.*, Summer 1958, 25, 127-44.
59. —, "The Problem of 'Success Indicators' in Soviet Industry," *Economica*, Feb. 1958, 25, 1-13.
60. —, "Some Notes on Soviet National Income Statistics," *Soviet Stud.*, Jan. 1955, 6, 247-80.
61. "Novyi krupnyi shag na puti k povysheniu material'no i kul'turnovo urovnya zhizni naroda" (A New Large Step on the Road to the Increase of the Material and Cultural Level of Life of the People), *Sotsialisticheskii Trud*, Oct. 1959, 10, 17-24.
62. *Politicheskaiia ekonomia: uchebnik*, 3 izd. (Political Economy: A Textbook, 3rd ed.). Moscow 1959.
63. *Pravda*. Various issues of the daily newspaper, specified by dates in the text.
64. J. STALIN, *The Economic Problems of Socialism in the USSR*. English transl. New York 1952.
65. S. G. STOLIAROV, *O tsenakh i tsenoobrazovanii v SSSR* (On Prices and Price Formation in the USSR). Moscow 1960.
66. TSENTRAL'NOE STATISTICHESKOE UPRAVLENIE, *Narodnoe khoziaistvo SSSR v 1958 godu* (Central Statistical Administration, National Economy of the USSR in 1958). Moscow 1959.
67. —, *Narodnoe khoziaistvo SSSR v 1959 godu* (Central Statistical Administration, National Economy of the USSR in 1959). Moscow 1960.
68. SH. YA. TURETSKII, *Ocherki planovogo tsenoobrazovania v SSSR* (Essays on Planned Price Formation in the USSR). Moscow 1959.
69. L. TURGEON, "Cost-Price Relationships in Basic Industries During the Planning Era," *Soviet Stud.*, Oct. 1957, 9, 143-77.

70. S. VARGA, "Money in Socialism," in *International Economic Papers*, No. 9, London 1958, pp. 201-35.
71. L. VOLIN, "Agricultural Policy of the Soviet Union," in *Comparisons of the United States and Soviet Economies*, Joint Economic Committee, 86th Cong., 1st sess., Washington 1959, Part I, pp. 285-18.
72. N. VOZNESENSKY, *The Economy of the USSR during World War II*. Eng. transl. Washington 1948.
73. B. WARD, "Kantorovich on Economic Calculation, *Jour. Pol. Econ.*, Dec. 1960, 68, 545-56.
74. —, "The Planners' Choice Variables," in *Value and Plan* (G. Grossman ed.), Berkeley 1960, pp. 132-51.
75. J. T. WHITMAN, "The Kolkhoz Market," *Soviet Stud.*, Apr. 1956, 7, 384-408.
76. P. J. D. WILES, "Rationality, the Market, Decentralization, and the Territorial Principle," in *Value and Plan* (G. Grossman ed.), Berkeley 1960, pp. 184-203.
77. M. R. WYCZALKOWSKI, "The Soviet Price System and the Ruble Exchange Rate," *Internat. Mon. Fund Staff Papers*, Sept. 1950, 1, 203-23.
78. M. YANOWITCH, "Trends in Soviet Occupational Wage Differentials," *Indus. and Lab. Rel. Rev.*, Jan. 1960, 13, 166-91.
79. *Zakon stoimosti i evo ispol'zovanie v narodnom khoziaistve SSSR* (The Law of Value and Its Utilization in the National Economy of the USSR), (Ya. A. Kronrod ed.). Moscow 1959.
80. *akon stoimosti i evo rol' pri sotsializme* (The Law of Value and Its Role Under Socialism), (N. A. Tsagolov ed.). Moscow 1959.
81. A. ZAUBERMAN, "The Soviet Debate on the Law of Value and Price Formation," in *Value and Plan* (G. Grossman ed.), Berkeley 1960, pp. 17-35.

FORECASTING AND ANALYSIS WITH AN ECONOMETRIC MODEL

By DANIEL B. SUITS*

Although an econometric model is the statistical embodiment of theoretical relationships that are every economist's stock in trade, its discussion has largely been kept on a specialized level and confined to the more mathematical journals. Models are rarely explored from the point of view of their usefulness to the profession at large, yet there is nothing about their nature or their application—aside, again, from a solid grasp of economic theory—that requires anything more than an elementary knowledge of school algebra. The compilation of an econometric model requires a certain degree of technical specialization, but once constructed, any competent economist can apply it to policy analysis and economic forecasting.

The purpose of this article is to present an actual econometric model of the U.S. economy, to demonstrate its use as a forecasting instrument, and to explore its implications for policy analysis. To minimize the technical background required, the presentation is divided into two main parts. Part I deals with the general nature of econometric models, and, using a highly simplified schematic example, illustrates how forecasts are made with a model, how a model can be modified to permit the introduction of additional information and judgment, and how short-run and long-run policy multipliers are derived from the inverse of the model. Part II presents the 32-equation econometric model of the U.S. economy compiled by the Research Seminar in Quantitative Economics. This model is the most recent product of a research project whose initial output was the well-known Klein-Goldberger model [1] [3]. In Part III the outlook for 1962, as calculated and published in November 1961, is studied as an example of an actual forecast; and earlier forecasts of this kind that have been prepared by the Research Seminar annually since 1953 are compared with actual events as a demonstration of the potential of the method.

In Part III the inverse of the model is also presented and its application to policy evaluation is reviewed. Short-run and long-run multipliers are calculated for selected policy variables. Part III also includes

* This is the report of a continuing project of the Research Seminar in Quantitative Economics, sponsored by National Science Foundation grant G-13423. The author is professor of economics at the University of Michigan.

a digression on deficit financing, covering an interesting and important theoretical implication of the model.

I. Econometric Models and Their Applications

The science of economics can be variously defined, but for the present purpose it is useful to think of it as the study of the relationships among a system of observable and essentially measureable variables: prices, costs, outputs, incomes, savings, employment, etc. These relationships derive from the complex behavior and interaction of millions of households, millions of firms, and thousands of governmental units, producing and exchanging millions of products. The relationships can be represented by a system of mathematical equations, but unfortunately a theoretically complete representation (e.g. a Walrasian system) would involve trillions of equations—surely millions for each household and firm. Moreover these equations would be individually as complex as human behavior, and involve the elaborate interaction of numberless variables.

We have neither the time nor the resources to deal with such a vast system of equations; to proceed at all we must simplify and condense. Millions of individual households become a single "household sector," millions of products become a single item of expenditure, e.g., "durable goods." Moreover, complex mathematical relationships among thousands of variables become simple linear approximations involving two or three aggregates. An econometric model of the economy is obtained by confronting these highly simplified equations with data arising from the historical operation of the economic system and, by appropriate statistical techniques, obtaining numerical estimates for their parameters.

The minimum number of equations necessary for an adequate representation of the economic system depends on a number of considerations, but clearly the fewer the equations the greater must be the level of aggregation and the less accurate and useful the result. On the other hand, the larger the number of equations and the greater the detail shown in the variables, the more complicated it is to derive the individual equations, to manipulate the resulting system, and to see the implications of the model. Where modern computing facilities can be used the mere size of the model is no longer a serious barrier to its effective application, but for purposes of exposition the smaller and simpler the model the better.

A. A Simple Illustrative Example

To illustrate the principles of application, let us suppose that the statistical procedure gave rise to the following, purely schematic, model of four equations.

$$(1) \quad C = 20 + .7(Y - T)$$

$$(2) \quad I = 2 + .1Y_{-1}$$

$$(3) \quad T = .2Y$$

$$(4) \quad Y = C + I + G$$

According to equation (1), consumption (C) depends on current disposable income ($Y - T$). In equation (2), investment (I) depends on income lagged one period. The third equation relates taxes (T) to income, while the last defines income as the sum of consumption, investment and government expenditure G .

While this model is small, it illustrates most of the properties of the larger model. The single consumption function in equation (1) corresponds to the set of four equations (01), (02), (03), and (04) that describe the behavior of the consumer sector in Part II. The investment behavior represented in (2) corresponds to equations (05), through (10). The single tax equation (3) corresponds to a combination of the eleven tax and transfer equations, while the relationship of production to income embodied in equation (4) is indicated in much greater detail by equations (11) through (20).

This econometric model approximates the economy by a system of equations in which the unknowns are those variables—income, consumption, investment, and tax yield—whose behavior is to be analyzed. The “knowns” are government expenditure and lagged income. When projected values for the “knowns” are inserted in the equations, the system can be solved to forecast the values of the unknowns.

Quotation marks are used advisedly on the word “knowns.” For, while some economic variables move so slowly along secular trends that their future values can be projected with considerable accuracy, others—for example new government expenditures—are unknown in advance of their occurrence, even in principle. Moreover, even the values of lagged variables are unknown at the time of the forecast, since a useful forecast must be made some months before the end of the preceding year. For example, each of the forecasts shown in Table 3 (p. 123) was made during the first week of November of the preceding year. To make such forecasts, lagged variables are estimated from data for the first three quarters of the year, with the third quarter given double weight.

At any rate, suppose we expect next year's government expenditure to be 20, and the preliminary estimate of this year's income is, say, 100. Substituting $G=20$ and $Y_{-1}=100$ into the equations above and solving gives $C=86.2$, $I=12$, $T=23.7$, $Y=118.2$.

B. *Introducing Outside Information*

It may appear from the foregoing that this kind of forecasting is a blind, automatic procedure; but while an econometric model looks like

a rigid analytical tool, it is actually a highly flexible device, readily modifiable to bring to bear additional information and judgment. For example, the investment equation in our little model is surely an unreliable predictor of capital formation. If no other information were available the equation would have to serve the purpose. But suppose we have available a survey of investment intentions reported by business. An estimate derived from such a survey is clearly superior to any that equation (2) could produce. To introduce the information into the forecast we simply remove equation (2) from the model and, in the remaining equations, set I equal to the survey value. Forecasts made from the Research Seminar model have frequently involved use of a figure for gross investment in plant and equipment derived from the McGraw-Hill Survey of Investment Intentions rather than from equation (05) of the model.¹

Information can also be used to modify individual relationships short of replacing them entirely. For example a prospective improvement in consumer credit terms—a variable that does not appear in our schematic model—would be expected to stimulate consumption expenditure. It is often possible to set an upper limit to this stimulating effect, and by increasing the constant term in the consumption function by this amount, to set an upper limit to the forecast economic outlook. An adjustment of this kind was applied to equation (01) to allow for the probable influence of the compact car on the outlook for automobile sales during 1960. For the same forecast, a similar modification of the housing starts equation (06) was made in anticipation of activity of the Federal National Mortgage Association.

Using the flexibility to full advantage permits the forecaster to explore any desired number of alternative sets of projections and modifications, and to bring to bear all information and judgment he possesses. The econometric model is not, therefore, a substitute for judgment, but rather serves to focus attention on the factors about which judgment must be exercised, and to impose an objective discipline whereby judgment about these factors is translated into an economic outlook that is consistent both internally, and with the past observed behavior of the economic system.

C. *The Inverse Matrix*

In principle, the exploration of a range of alternative projections and other modifications of the model consists of inserting each set of alternatives in turn as “knowns” in the equations and solving for the resulting

¹ The McGraw-Hill Survey of Investment Intentions is conducted annually in the fall. It becomes available just in time to be incorporated in the forecast presented before the Conference on the Economic Outlook, held annually during the first week of November at the University of Michigan. For several years the Conference has been the occasion for the release of the data by *Business Week*.

forecast. The process is greatly expedited by further simplifying the model and by the use of the inverse matrix. Simplification of the model is made possible by the fact that one of the unknowns, I , depends only on knowns. I helps to determine the current values of C , T , and Y , but the latter do not, in turn, feed back into the determination of the current value of I . As a result, once the knowns are given, I can be directly calculated from (2) without reference to any other part of the model, and hence, as far as the remaining equations are concerned, I can be treated as a known in the sense used above. (Indeed it is this fact that enables us to replace equation (2) with survey values for I .)

The process of solving the system of equations can then be divided into two parts. First: using the values of the knowns, calculate the value of I . Second: substitute the knowns (now including I) into the remaining equations, and solve for the other unknowns.

The inverse matrix facilitates the second step. For those unfamiliar with matrix manipulations the following will help clarify the nature and use of this table. Since I is now considered as known, the model is reduced to the system of three equations (1), (3) and (4) above. By transferring all unknowns to the left side, and representing the right sides by P_1 , P_3 , and P_4 , these equations can be expressed as:

$$(1) \quad C - 0.7Y + 0.7T = 20 = P_1$$

$$(3) \quad -.2Y + 1.0T = 0 = P_3$$

$$(4) \quad -C + Y = I + G = P_4$$

Now using any convenient method to solve this system for C , Y , and T in terms of P_1 , P_3 , and P_4 will yield:

$$C = 2.273P_1 - 1.591P_3 + 1.273P_4$$

$$T = .445P_1 + .682P_3 + .455P_4$$

$$Y = 2.273P_1 - 1.591P_3 + 2.273P_4$$

That is, the value of each unknown is obtained as a specified weighted total of P_1 , P_3 , and P_4 . Where a large number of equations is used, and a lot of calculating is to be done, it is convenient to display the weights used for each unknown as a column of numbers in a table, with the detail of the P 's shown in a separate column at the right:

Equation No.	C	T	Y	P
(1)	2.273	.455	2.273	20
(3)	-1.591	.682	-1.591	0
(4)	1.273	.455	2.273	$I + G$

To make a forecast we first substitute Y_{-1} into equation (2) and solve for I . Then I and G are substituted in the P column of the table and the

values of P_1 , P_3 and P_4 calculated. These values, weighted by the numbers shown in the C column of the inverse and summed, give the forecast value of consumption; use of the weights in column Y gives the forecast for income, etc.² For example if we set $Y_{-1}=100$ and $G=20$, we first find from (2) $I=12$. Substituting these values in column P of the table gives the forecast values: $C=86.2$, $T=23.7$, $Y=118.2$.

D. *Short-Run Policy Multipliers*

It is an obvious step from economic forecasting to short-run policy analysis. To investigate any specified set of prospective government actions, we insert them in the proper place in column P and solve for the forecast implied by these assumptions. The analysis is expedited if we first calculate short-run multipliers for the individual components of government action. These can then be applied in any desired policy mixture.

Short-run multipliers for any policy variable are readily calculated by inserting $+1$ for the variable everywhere it appears in column P , and then (ignoring all terms that do not contain the variable in question) extending a forecast using the columns of the inverse. For example, to calculate the government expenditure multiplier, set $G=1$ in row (4) of column P . This makes $P_4=1$. To find the effect of this value of G on, say, income, multiply this value of P_4 by the weight in row (4) of the Y column to get $Y=1 \times 2.273=2.273$. That is, the income multiplier on government expenditure is 2.273. Likewise, $T=1 \times .455=.455$. That is, the tax-yield multiplier on government expenditure is .455. In other words, for every dollar of additional government expenditure, tax receipts rise by nearly 46 cents. A corollary is that—according to our schematic model—an increase in government expenditure of 1 with no change in tax legislation will generate an increase in deficit of only:

$$G - T = 1 - .46 = .54$$

In addition to changing the value of exogenous variables like government expenditure, government policy can produce changes in the equations themselves. An extensive change—e.g. a substantial alteration in tax rates—can only be studied by replacing the old tax equation by a new one, but less extensive changes can be studied as shifts in the levels of existing equations, the coefficients being unaltered.

Multipliers for such shifts are easily determined by placing $+1$ in the row of column P that corresponds to the equation being shifted. The extensions are then made as before. For example, to calculate the multipliers on a $+1$ shift in the level of the tax equation, we put $+1$ in the row marked (3) of column P , since the tax equation is (3). The multi-

² As those familiar with matrix algebra will recognize, the inverse matrix is tabulated here in its transposed form, and goes into the P vector at the right column by column.

plier effect of this shift is then calculated by multiplying this 1 by the weight in the corresponding row of the appropriate column, as shown above. For example for income:

$$Y = 1 \times (-1.591) = -1.591$$

For consumption:

$$C = 1 \times (-1.591) = -1.591$$

In other words, the multipliers associated with the shift of any equation are merely the weights in the row of the inverse corresponding to that equation.

Note that according to our simplified model, the tax-yield multiplier is .682. That is, an upward shift of \$1 billion in the tax *schedule* actually increases *yield* by only \$682 million. The difference is due to the decline in income arising from the shift in the tax schedule.

The small size of our illustrative model limits the policy variables to government expenditure and the level of taxes. In the more extensive model below, policy is given considerably more scope; a number of individual tax and transfer equations can be shifted, and a number of different kinds of expenditure altered. The number of possible combinations of action is correspondingly very large; but one important advantage to a linear system lies in the fact that once multipliers for the individual components have been calculated, the economic implications of a complete policy "package" can be estimated by summing the effects of the individual components.

For example, an increase of \$1 in government expenditure coupled with an upward shift of \$1 in the tax schedule would generate a change in income given by the sum of the two individual multipliers:

$$Y = 2.273 - 1.591 = .682$$

This is what might be called an "*ex-ante*-balanced" government expenditure multiplier. That is, the change in the law is such as to increase tax yield at the *existing* level of income by enough to balance the planned expenditure, but the budget will not necessarily be balanced *ex post*. The tax and expenditure program will alter income, and hence will change tax yields. Analysis of the complete fiscal impact of the operation requires the examination of all revenue and outlay items combined. Adding together the two tax-yield multipliers we find that the additional expenditure of \$1 is offset by a tax yield of:

$$.682 + .455 = 1.137$$

That is, the *ex-ante*-balanced expenditure of \$1 billion would, in our example, be accompanied by an increase of \$1.137 billion in tax yield and give rise to an *ex-post* surplus of \$137 million.

E. Dynamics and Long-Run Multipliers

An increase in government expenditure of 1.0 will increase income by 2.273 the same year. But the long-run effect of expenditure sustained at this level will differ from this. According to equation (2), an increase in income this year will generate an increase in investment next year. This will again raise income and add further stimulus the following year, etc. Once the inverse has been tabulated, however, the sequence can easily be calculated by inserting the forecast values of one year as the "knowns" of the next. Thus an initial increase in G of 1 will raise Y by 2.273. This will raise I by $.2 \times 2.773 = .455$ the following year. The value of P_4 is then $G + I = 1.455$ and the second year income rises to 3.307 above its initial value, etc. The five-year sequence of values would be:

Year	1	2	3	4	5
Income	2.273	3.307	3.775	3.989	4.087

This means, for example, that if government expenditure is increased by 1 in 1961, and sustained at that new level, the level of income in 1965 will—other things equal—be 4.087 higher than it was in 1960.

Similar sequences can be worked out for other policy variables. For example a shift of 1 in the tax schedule in year 1 would imply the following sequence of annual income values:

Year	1	2	3	4	5
Income	-1.591	-2.314	-2.643	-2.793	-2.862

Like short-run multipliers, these long-run multipliers can be combined by simple addition. For example, a permanent rise of 1 in government expenditure coupled with an *ex-ante* shift of 1 in the tax schedule would raise income by $2.273 - 1.591 = .682$ the first year. After 5 years, however, income would be $4.087 - 2.862 = 1.225$ higher than its initial level.

Although the discussion has been focused on a highly simplified example, the principles developed apply equally to any linear econometric model. The presentation of the actual Research Seminar model in Part II will follow the same pattern as the illustration of Part I.

II. The Model of the U.S. Economy

The model developed by the Research Seminar in Quantitative Economics consists of 32 equations, most of them least-squares linear regressions fitted to annual first differences in the variables.³

³ The exceptions are definitional equations, and those approximating tax laws. Use of least squares is unnecessary for the former, and inappropriate to the latter. The frequency of change in tax laws makes past data irrelevant to their current analysis. Tax equations were fitted by eye through a few relevant points.

Five advantages are gained by the use of first differences. In the first place, the autocorrelation of residuals from time series regressions causes a downward bias in calculated standard errors, giving an exaggerated appearance of precision to the result. The use of first differences serves to reduce this bias. Secondly, many of the equations—e.g. the demand for consumer durables—involve stocks for which data are not currently available. The increase in a stock is composed of current acquisitions less retirements. Since the latter tends to be a smooth series, exhibiting little year-to-year variation, the first difference in stock is well represented by acquisitions, a figure readily available on a current basis. Thirdly, in short-run analysis and forecasting, the present position is known, and *ceteris paribus* will continue. The important question is what change from that position will result from projected changes in other factors. The use of first differences serves to focus the power of the analysis on these changes. Fourthly, the use of first differences minimizes the effect of slowly moving variables such as population, tastes, technical change, etc., without explicitly introducing them into the analysis. The net effect of changes in these factors is represented in the constant term of the equation. Finally, use of first differences minimizes the complications produced by data revision when the model is applied. Revisions usually alter the level at which variables are measured, rather than their year-to-year variation.

In calculating the equations, the prewar and postwar periods were explored separately to determine whether there was any indication of a change in the coefficients. Except for institutional relationships—tax laws, transfers, etc.—no important shifts were discovered. Nevertheless the final equations are fitted only to data drawn from the period 1947–1960 to maximize their applicability to current problems.

The equations of the model are presented and discussed below by sectors, and the symbol for each variable is explained the first time it appears. In general the variables correspond to the magnitudes as given in the national accounts, measured in billions of 1954 dollars. In calculating the equations, however, all imputations were removed from the Department of Commerce figures for consumer expenditure and disposable income. These imputations, mainly associated with services rendered by financial institutions and by owner-occupied dwellings, are added back in after a forecast is made to maintain comparability with the national accounts. First differences are indicated throughout by prefixing Δ to the symbol of the variable. Note, however, that lagged undifferenced values of certain variables appear at some points (e.g. in the automobile demand equation (01) below). These undifferenced values serve as proxy variables for first differences in stocks as explained above. Figures in parentheses are the standard errors of the regression coefficients.

A. *Aggregate Demand*

1. Consumption

(01) Automobiles and Parts:

$$\begin{aligned}\Delta A = & .177 \Delta(Y - X_u - X_f - X_s) - .495 A_{-1} \\ & (.086) \qquad \qquad (.168) \\ & + .260 \Delta L_{-1} + 4.710 \\ & (.082)\end{aligned}$$

Consumer expenditure for new and net used automobiles and parts (ΔA) depends on disposable income (Y), net of transfers for unemployment compensation (X_u), and other federal (X_f) and state (X_s) transfers. These transfers are deducted on the ground that they are unlikely to find their way into the automobile market. Servicemen's insurance dividends (X_{si}) are not deducted from disposable income. In addition, automobile demand depends on the stock of cars on the road (A_{-1}) and on the real value of consumer liquid assets at the end of the preceding year (ΔL_{-1}). For this purpose liquid assets are defined as household holdings of currency and demand deposits plus fixed-value redeemable claims as estimated by the Federal Reserve Board. The sizeable constant term in the equation probably reflects replacement demand.⁴

(02) Demand for Other Durables:

$$\begin{aligned}\Delta D = & .176 \Delta Y - .0694 D_{-1} + .0784 \Delta L_{-1} + .262 \\ & (.015) \qquad (.029) \qquad (.016)\end{aligned}$$

This equation relates ΔD , consumer expenditure for durables (other than automobiles and parts) to disposable income (ΔY), the accumulating stock of durables (D_{-1}) and liquid assets.

(03) Demand for Nondurable Goods:

$$\begin{aligned}\Delta ND = & .224 \Delta Y + .205 \Delta ND_{-1} + .143 \Delta L_{-1} - .149 \\ & (.060) \qquad (.135) \qquad (.059)\end{aligned}$$

Nondurable expenditure depends on disposable income, liquid assets, and last year's nondurable expenditure (ΔND_{-1}). Notice the difference between this and the foregoing equations. In (01) and (02) the lagged values were undifferenced representing accumulation of stock. In this equation the difference itself is lagged, representing a dynamic adjustment in nondurable expenditure: an initial rise in level is followed by a subsequent secondary rise.

(04) Demand for Services:

$$\begin{aligned}\Delta S = & .0906 \Delta Y + .530 \Delta S_{-1} + .0381 \Delta L_{-1} + .363 \\ & (.029) \qquad (.170) \qquad (.029)\end{aligned}$$

This equation is similar to (03) and relates expenditure for services

⁴ This equation is a simplified version of that given in [5].

may lose its role in the model.⁶ The term HS_{-1} , the lagged undifferenced value of housing starts, only partially represents the effect of this accumulation, and equation (06) is probably due for revision.

(07) Housing Expenditure:

$$\Delta H = .125 \Delta HS + .024 \Delta HS_{-1} + 6.580 \Delta C + .083$$

(.013) (.012) (5.42)

Expenditure on housing, (ΔH), depends on the rate at which residential construction is carried forward, and thus on current and lagged starts. In addition it depends on construction costs. The term ΔC is the ratio of the index of construction costs to the *GNP* deflator.

(08) Durable Goods Inventory:

$$\Delta ID = .291 \Delta(A + D) + .591 \Delta PD + .305 \Delta M_{+1} - .669 ID_{-1}$$

(.100) (.157) (.085) (.109)

Accumulation of durable inventories, ΔID , depends on sales of consumer durables, producers durables ΔPD , and the stock of inventory already accumulated ID_{-1} . In addition an important component of inventory is associated with government military orders. Production on such orders appears in the national accounts as goods in process, and exerts a strong impact on the economy long before delivery of the finished product materializes as government expenditure. A wide variety of arrangements and lead times are involved in this process.⁷ As a proxy for such orders in any given year, we use ΔM_{+1} , federal military purchases from private industry the following year.

The equilibrium sales-inventory ratio implied by this equation compares favorably with that observed from other data.

(09) Nondurable Goods Inventory:

$$\Delta IND = .427 \Delta ND - 1.121 IND_{-1}$$

(.111) (.248)

Accumulation of nondurable inventory, ΔIND , depends on consumer sales of nondurables and the stock already on hand, IND_{-1} .

(10) Imports:

$$\Delta R = .0602 \Delta G^* + .369$$

(.03)

This relates the aggregate level of imports to the private GNP (G^*).

3. Private Gross National Product

$$(11) \Delta G^* = \Delta(A + D + ND + S) + (\Delta F - \Delta R) + \Delta ID + \Delta IND$$

$$+ \Delta PE + \Delta H + \Delta g$$

⁶ Guttentag argues that this is not necessarily the case [2, p. 297].

⁷ For an excellent study of these see [6].

Private GNP is defined as the sum of its parts including net exports ($\Delta F - \Delta R$) and government purchases from private firms (Δg).

B. *Income and Employment*

(12) Wage and Salary Workers, Private Sector:

$$\Delta E = .068 \Delta G^*$$

This production function, relating ΔE , the number of full-time equivalent employees in the private sector (measured in millions of persons) to the private GNP, applies specifically to the forecast of 1962 and is based on the first three quarters recovery experience during 1961.

(13) Unemployment:

$$\Delta U = \Delta LF - \Delta E_0 - \Delta E_G - \Delta E$$

Unemployment is the difference between labor force (ΔLF) on the one hand, and the number of self-employed and unpaid family workers, (ΔE_0), government workers, including armed services (ΔE_G) and employees of private industry (ΔE).

(14) Average Annual Earnings:

$$\Delta w = - .0216 \Delta U + .00436 P^*_{-1} - .0743$$

(.0076) (.0025)

Δw , average annual earnings (including wages and salaries plus "other labor income," and measured in thousands of dollars) is related to unemployment and last year's profits. This relationship reflects two facts. First and probably more important, annual earnings are heavily influenced by overtime pay which varies inversely with the level of unemployment. Secondly, pressure of union demands varies directly with profits and inversely with the level of unemployment. The undifferenced level of profits is used since the *existence* of profits acts as a target for wage demands.

(15) Private Wage Bill:

$$\Delta W = \Delta(wE) = w_{-1} \Delta E + E_{-1} \Delta w$$

By definition the wage bill is the product of average earnings and employment. To keep the model linear, this nonlinear relationship is replaced by the linear approximation shown.

(16) Depreciation:

$$\Delta Dep = .0456 \Delta G^* + .763$$

(17) Property Income:

$$\Delta P = \Delta G^* - \Delta W - \Delta Dep - \Delta T_{fc} - \Delta T_{cd} - \Delta T_{bp} \\ - \Delta T_{ss} - \Delta T_{os} - \Delta SI_r$$

Property income (ΔP) is a residual from the GNP after deducting wage costs, depreciation (ΔDep), employer contributions for social insurance (ΔSI_r), and indirect business taxes: federal excises (ΔT_{fe}), customs duties (ΔT_{ca}), business property (ΔT_{bp}), state sales (ΔT_{ss}), and other state taxes on business (ΔT_{os}).

(18) Corporate Profits:

$$\Delta P^* = .902 (\Delta P - \Delta P_f) - 1.027$$

This relates profits (ΔP^*) to total property income net of farm income (ΔP_f). There is, of course, no strong theoretical basis for the particular distribution of corporate business found in the U.S. economy. This equation is an empirical representation of the distribution of property income under existing institutional arrangements.

(19) Dividends:

$$\begin{aligned} \Delta Div = & \frac{.229}{(.064)} (P^* - T_{fe} - T_{sc}) \\ & + \frac{.0198}{(.052)} (P^* - T_{fe} - T_{sc} - Div)_{-1} - .0191 \end{aligned}$$

Current dividends (ΔDiv) depend on current profits after federal (T_{fe}) and state (T_{sc}) corporate profits taxes, and on last year's level of undistributed profits.

(20) Disposable Income:

$$\begin{aligned} \Delta Y = & \Delta W + \Delta W_g + (\Delta P - \Delta P^*) + \Delta Div + \Delta i_g + \Delta X_u + \Delta X_f + \Delta X_s \\ & + \Delta X_{gt} - \Delta T_{fy} - \Delta T_{sy} - \Delta T_{eg} - \Delta T_{op} - \Delta SI_e + \Delta T_{ref} \end{aligned}$$

Disposable income is the sum of wages, including government wages (W_g), noncorporate property income ($\Delta P - \Delta P^*$), dividends, government interest payments (i_g), plus transfers, less personal taxes: federal (ΔT_{fy}), and state (ΔT_{sy}) income, estate and gift (ΔT_{eg}), other personal taxes (ΔT_{op}) and personal contributions for social insurance ΔSI_e , all net of tax refunds ΔT_{ref} .

C. Taxes and Government Transfers

1. Federal Taxes

(21) Federal Corporate Profits Tax:

$$\Delta T_{fe} = .500 \Delta P^*$$

(22) Federal Personal Income Tax Receipts:

$$\Delta T_{fy} = .111(\Delta W + \Delta W_g) + .150(\Delta P - \Delta P^* + \Delta i_g) + .195 \Delta Div$$

This equation relates income tax receipts in the form of withholding, quarterly payments on estimated tax, and final tax payment to the sev-

eral income components. The coefficients reflect both variation in income shares by tax bracket and the effect of the dividend tax credit.

(23) Federal Personal Income Tax Liability:

$$\Delta T_{fu} = .100(\Delta W + \Delta W_G) + .114(\Delta P - \Delta P^* + \Delta i_G) + .154\Delta Div$$

Tax receipts commonly exceed liability. The difference (ΔT_{ref}) appears as a tax refund the following year.

(24) Federal Excise Taxes:

$$\Delta T_{fe} = .099\Delta A + .011\Delta D + .003\Delta ND + .010\Delta G^* + .015\Delta Y$$

(25) Customs Duties:

$$\Delta T_{cd} = .083\Delta R + .012$$

2. State and Local Taxes

(26) State Corporate Income Taxes:

$$\Delta T_{sc} = .019\Delta P^*$$

(27) State and Local Sales Taxes:

$$\Delta T_{ss} = .033(\Delta A + \Delta D + \Delta ND + \Delta S)$$

(28) State and Local Personal Income Taxes:

$$\Delta T_{sy} = .010(\Delta W + \Delta W_G + \Delta P - \Delta P^* + \Delta Div + \Delta i_G)$$

3. Social Insurance Programs

(29) Private Employer Contributions for Social Insurance:

$$\Delta SI_r = .149\Delta E$$

(30) Personal Contributions for Social Insurance:

$$\Delta SI_e = .129(\Delta E + \Delta E_G) + .050(\Delta P - \Delta P^*)$$

(31) Covered Unemployment:

$$\Delta U_c = .675\Delta U - .140(\Delta LF - \Delta LF_{-1})$$

The relationship of unemployment covered by compensation programs (ΔU_c) to total unemployment varies with the rate of increase in the labor force. When the labor force is growing rapidly, new entrants, not yet covered, make up a larger proportion of total unemployment.

(32) Unemployment Compensation:

$$\Delta X_u = 1.77 \Delta U_c + .101$$

III. *The Model as a Forecasting Instrument*

A. *The Forecast of 1962*

The unknowns of the model are the 32 variables like automobile demand, disposable income, private GNP, etc. that stand on the left side of the equations. The knowns are variables like government pur-

TABLE 1—PROJECTIONS UNDERLYING FORECAST OF 1962

Equation			
(01)	$A_{-1}=14.3$	$\Delta L_{-1}=16.9$	$X_f=\Delta X_s=0$
(02)	$D_{-1}=27.3$	$\Delta L_{-1}=16.9$	
(03)	$\Delta ND_{-1}=1.2$	$\Delta L_{-1}=16.9$	
(04)	$\Delta S_{-1}=3.4$	$\Delta L_{-1}=16.9$	
(05)	$\Delta PE=1.3^a$		
(06)	$\Delta Aaa=+.02$	$\Delta \left(\frac{FHA+VA}{2} \right) = -.06^b$	$HS_{-1}=93.1$
(07)	$\Delta HS_{-1}=3.2$	$\Delta C=0$	
(08)	$\Delta PD=.7^a$	$\Delta M_{+1}=1.0$	$ID_{-1}=0.0$
(09)	$IND_{-1}=1.7$		
(10)	—		
(11)	$\Delta F=0$	$\Delta PE=1.3^a$	$\Delta g=6.9$
(12)	—		
(13)	$\Delta LF=1.2$	$\Delta E_0=.2$	$\Delta E_G=.6$
(14)	$P^*_{-1}=39.6$		
(15)	$w_{-1}=4.38$	$E_{-1}=46.9$	
(16)	—		
(17)	$\Delta T_{bp}=.730$	$\Delta T_{os}=.087$	
(18)	$\Delta P_f=0$		
(19)	—		
(20)	$\Delta X_f=\Delta X_s=\Delta X_{GI}=0$	$\Delta W_G=1.5$	$\Delta i_G=.1$ $\Delta T_{op}=.35$ $\Delta T_{eq}=.08$ $\Delta T_{ref}=0$
(21)	—		
(22)	$\Delta W_G=1.5$	$\Delta i_G=.1$	
(23)	$\Delta W_G=1.5$	$\Delta i_G=.1$	
(24)	—		
(25)	—		
(26)	—		
(27)	—		
(28)	$\Delta W_G=1.5$	$\Delta i_G=.1$	
(29)	—		
(30)	$\Delta E_G=.6$		
(31)	$\Delta LF=1.2$	$\Delta LF_{-1}=1.0$	
(32)	—		
(Addendum) Δ Imputed Services = 1.5			

^a Based on McGraw-Hill survey showing 4 per cent increase in plant and equipment expenditure.

^b FHA ceiling rates are projected at their present level throughout 1962. The projected decline reflects the fact that they were above this level in early 1961.

chases from private firms, labor force, household liquid assets, etc. that appear only on the right side of the equations, and whose values must be projected or assigned before the unknowns can be forecast.

The forecast of 1962, calculated and presented in November 1961, employed the projected values shown in Table 1. The most important single item was the \$16.9 billion increase in consumer holdings of liquid assets. A few of the other key items were: a \$6.9 billion projected increase in government purchases from private firms; an increase of .6 million in government employment; increase in government wage pay-

ments of \$1.5 billion; and a \$1 billion rise in military orders. Note that investment in plant and equipment is projected directly on the basis of the McGraw-Hill survey rather than from equation (05). All monetary values are in 1954 dollars.

When the projections of Table 1 were inserted in the equations, the solution gave the outlook for 1962 shown in Table 2. The first two columns contain a detailed comparison of the forecast of 1961 with the preliminary actual values. The middle column contains the solutions obtained from the equations. These are in first differences and are expressed as increases over 1961. When the forecast increase is added to the preliminary actual level for 1961 the result is the forecast level of 1962 shown in the fourth column. In the last column this forecast has been translated into approximate 1962 prices.⁸

The forecast entails substantial increases in consumption expenditure, especially for automobiles. The forecast level of \$18.8 billion for this sector constitutes a record level of automobile sales, exceeding the \$17.9 billion reached in 1955. This large increase derives primarily from the high level of consumer liquidity and the small addition to stocks of cars during 1961.

Aside from the consumer sector the main stimulus to the economy derives from projected increases in government outlays, associated with the trend of state and local expenditures and federal defense expenditure. In preparing the forecast no allowance was made for the possible effect of a steel strike during 1962. Inventory accumulation in anticipation of interruption of steel supplies will probably accelerate inventory accumulation in the first half of the year and depress it in the second half. There is no indication that this will alter the over-all level for the year.

The forecast increase in production is adequate to absorb more than the growth of the labor force, and the outlook concludes by showing a reduction of 1.3 million in unemployment, reducing the average for the year to 3.6 million or 5 per cent of the civilian labor force.

B. Review of Past Forecasts

The Research Seminar in Quantitative Economics has been making annual forecasts since 1953, each a matter of record published in advance of the year forecast. The econometric model has been revised and improved several times over this period (the version presented here was first used for the 1962 forecast), but the review of past forecasting performance in Table 3 will illustrate the general reliability of the method.⁹

⁸ To convert the values from 1954 to 1962 prices they were multiplied by deflators obtained by raising 1961 deflators $1\frac{1}{2}$ per cent across the board. The result serves to put the forecast in proper perspective, but should not be thought of as part of the forecast itself.

⁹ The review of the 1961 forecast, compared with the actual outcome, is provided in Table 2.

TABLE 2—REVIEW OF 1961 AND OUTLOOK FOR 1962
(Monetary figures, except column 5, are billions of 1954 dollars)

	1961		Forecast Increase	Forecast 1962	
	Forecast	Actual ^a		(1954 prices)	(1962 prices)
Gross National Product	450.1	446.8	27.5 ^a	474.3	559.9
Consumption Expenditures					
Automobiles and Parts	14.6	14.3	4.5	18.8	21.2
Other Durables	25.1	24.8	1.9	26.7	28.7
Nondurables	144.7	142.7	5.3	148.0	163.6
Services	119.9	119.6	5.5 ^a	125.1	147.9
Private Gross Capital Expenditure					
Plant and Equipment	39.0	37.3	1.3	38.6	48.1
Residential Construction	19.9	17.7	0.1	17.8	21.4
Inventory Investment					
Durables	2.4	0.0	2.6	2.6	2.8
Nondurables	1.7	0.4	2.1	2.1	2.3
Imports	24.8	22.2	1.9	24.1	24.8
Exports	24.6	26.4	—	26.4	28.7
Government Expenditure on Goods and Services	84.7	84.5	7.8	92.3	120.0
Corporate Profits	40.3	39.6	5.1	44.7	52.5
Dividends	12.4	12.3	0.7	13.0	15.3
Civilian Labor Force ^b (millions of persons)	71.3	71.6	0.9	72.5	
Private Wage and Salary Workers		46.9	1.7	48.6	
Govt. Employees (Civilian)	67.0	8.8	0.3	9.1	
Self-employed	11.0	0.2	11.2		
Unemployed ^b					
Number (millions)	4.3	4.9	-1.3	3.6	
Per cent of Civilian Labor Force	6.0	6.8	—	5.0	

^a Preliminary.

^a Includes imputed services.

^b Annual average.

Each forecast is shown as it was presented, and compared with the actual outcome.¹⁰ Note that from 1953 to 1956 the figures are given in 1939 dollars; thereafter the price level employed was changed almost every year. The increasing elaboration of the model is evident in the table.

As plotted in Figure 1, the general accuracy of these forecasts speaks for itself. The direction of movement was correctly forecast each year,

¹⁰ Since data revisions occur frequently, there is some question as to what figures should be taken as "actual." Since we want the "actual" figures as close as possible in definition and economic context to the data on which the forecast was based, they are taken from the issue of the *Survey of Current Business* appearing in the February following the forecast year. E.G. the "actual" GNP for 1954 is the value for 1954 published February 1955.

and the levels were generally well predicted. The recession of 1954 was forecast with considerable precision. The recovery of 1955 was likewise forecast, but the magnitude of the boom that developed was grossly underestimated. The fact that the error of the 1955 forecast is concentrated in the consumer sector lends support to the idea that this was a consumer-generated movement. The recession of 1958 was well predicted. The recovery of 1959 was somewhat underestimated.

In many respects the forecast of 1960 was the most interesting of all. Made in November 1959 at the height of business optimism, and amidst

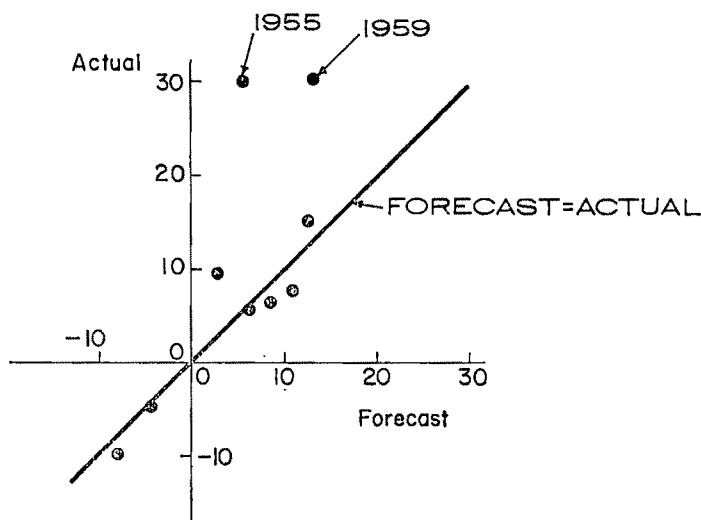


FIGURE 1. COMPARISON OF FORECAST WITH ACTUAL CHANGES IN GNP (1953-61)
(billions of 1954 dollars)

general anticipation of the "soaring 'sixties," its pessimistic outlook for 1960 was greeted with almost complete skepticism, but it proved to be more exact than any other forecast placed on record in advance.

C. Short-Run Policy Multipliers

Simplification of the model is carried out as illustrated in Part I. Inspection shows that in equation (05), plant and equipment expenditure (ΔPE) depends only on "known" values: last year's profits after taxes, and the stock of plant and equipment available at the beginning of the year. Similarly in equations (06) and (07), housing starts (ΔHS) and expenditure for nonfarm residential construction (ΔH) depend only on credit availability, construction costs, last year's starts, and the stock of houses at the beginning of the year. To make a forecast, therefore, we

TABLE 3—REVIEW OF PAST FORECASTS

	1953 ^a		1954 ^a		1955 ^a		1956 ^a		1957 ^b	
	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual
Gross National Product	177.4	178.6	174.8	173.9	176.4	188.5	191.6	191.2	337.0	335.2
Consumption Expenditure	114.4	115.9	117.3	116.7	118.6	125.1	127.4	128.5	226.2	226.1
Private Gross Capital Formation	24.2	24.9	22.7	23.6	25.2	25.9	28.7	26.3	47.2	44.4
Employee Compensation	80.4 ^f	79.8 ^f	82.3 ^f	83.0 ^f	81.2 ^f	89.5 ^f	107.1	104.3	196.5	196.3
	1958 ^a		1959 ^a		1960 ^a					
Gross National Product	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual
Consumption Expenditure	432.7	432.5	456.7	475.7	432.0	439.2	432.0	439.2	432.0	439.2
Automobiles	282.1	287.3	295.4	310.7	287.1	296.8	287.1	296.8	287.1	296.8
Other Durables	—	—	—	—	16.7	15.6	16.7	15.6	16.7	15.6
Non Durables	—	—	—	—	25.2	25.2	25.2	25.2	25.2	25.2
Services	—	—	—	—	138.9	141.9	138.9	141.9	138.9	141.9
Private Gross Capital Expenditure	61.9	53.7	61.2	70.4	62.4	60.5	62.4	60.5	62.4	60.5
Plant and Equipment	—	—	44.0	43.0	40.5	39.3	40.5	39.3	40.5	39.3
Residential Construction	—	—	17.8	21.6	19.7	18.0	19.7	18.0	19.7	18.0
Inventory	—	—	—	5.8	2.2	3.2	2.2	3.2	2.2	3.2
Government Purchase of Goods and Services	88.8	90.5	100.1	94.6	83.7	80.3	83.7	80.3	83.7	80.3
Net Exports	—	—	—	—	—1.3	1.6	—1.3	1.6	—1.3	1.6
Employee Compensation	254.3	251.8	261.0	273.4	236.3	257.1	236.3	257.1	236.3	257.1
Corporate Profits	39.5	36.5	47.7	45.8	42.7	38.7	42.7	38.7	42.7	38.7
Dividends	—	—	—	—	12.2	12.2	12.2	12.2	12.2	12.2
Civilian Employment	66.4	66.5	66.0	65.6	65.5 ^g	66.7 ^h	65.5 ^g	66.7 ^h	65.5 ^g	66.7 ^h
Unemployment	4.8	4.7	3.4	3.8	4.4 ^g	3.9 ^h	4.4 ^g	3.9 ^h	4.4 ^g	3.9 ^h

^a 1939 prices^b 1947 prices^c 1954 prices^d 1958 prices^e 1954 prices^f private sector only^g excludes Alaska and Hawaii^h includes Alaska and Hawaii

TABLE 4—INVERSE MATRIX

Equation No.	ΔA	ΔD	ΔND	ΔS	ΔID	ΔIND	ΔR	ΔG^*	ΔE
01	1.113	.089	.113	.046	.350	.048	.100	1.660	.113
02	.117	1.092	.118	.048	.351	.050	.101	1.676	.114
03	.130	.103	1.130	.053	.068	.483	.112	1.854	.126
04	.091	.072	.091	1.037	.047	.039	.078	1.298	.088
08	.092	.073	.093	.037	1.048	.040	.078	1.304	.089
09	.092	.073	.093	.037	.048	1.040	.078	1.304	.089
10	-.095	-.076	-.097	-.040	-.050	-.041	.921	-1.318	-.089
11	.092	.073	.093	.037	.048	.042	.078	1.304	.089
12	.884	.623	.793	.321	.439	.339	.192	3.205	1.218
13	-.118	.091	.116	.047	-.008	.049	.010	.167	.011
14	8.621	8.030	10.220	4.133	4.845	4.364	2.283	37.929	2.579
15	.184	.171	.218	.088	.103	.093	.049	.809	.055
16	-.040	-.037	-.047	-.019	-.022	-.020	-.012	-.175	-.012
17	.040	.037	.047	.019	.022	.020	.012	.175	.012
18	-.179	-.166	-.212	-.086	-.100	-.090	-.047	-.786	-.053
19	.202	.188	.240	.097	.114	.102	.054	.890	.061
20	.254	.237	.302	.122	.143	.129	.067	1.119	.076
21	-.046	-.043	-.055	-.022	-.026	-.024	-.012	-.204	-.014
22	-.254	-.237	-.302	-.122	-.143	-.129	-.067	-1.119	-.076
24	-.040	-.037	-.047	-.019	-.022	-.020	-.012	-.175	-.012
25	-.040	-.037	-.047	-.019	-.022	-.020	-.012	-.175	-.012
26	-.046	-.043	-.055	-.022	-.026	-.024	-.012	-.204	-.014
27	-.040	-.037	-.047	-.019	-.022	-.020	-.012	-.175	-.012
28	-.254	-.237	-.302	-.122	-.143	-.129	-.067	-1.119	-.076
29	-.040	-.037	-.047	-.019	-.022	-.020	-.012	-.175	-.012
30	-.254	-.237	-.302	-.122	-.143	-.129	-.067	-1.119	-.076
31	.101	.391	.498	.201	.143	.213	.088	1.461	.099
32	.058	.221	.281	.114	.081	.120	.050	.825	.056

Projections

01	$4.710 - .495A_{-1} + .260\Delta L_{-1} - .177\Delta X_f - .177\Delta X_s$
02	$.262 - .0694D_{-1} + .0784\Delta L_{-1}$
03	$-.149 + .205\Delta ND_{-1} + .143\Delta L_{-1}$
04	$.363 + .530\Delta S_{-1} + .0381\Delta L_{-1}$
08	$0 + .591\Delta PD + .305\Delta M_{+1} - .669ID_{-1}$
09	$0 - 1.121IND_{-1}$
10	.369
11	$0 + \Delta F + \Delta PE + \Delta H + \Delta g$
12	0
13	$0 + \Delta LF - \Delta E_0 - \Delta E_G$
14	$-.0743 + .00436P^*_{-1}$
15	0
16	.763
17	$0 - \Delta T_{bp} - \Delta T_{os}$

TABLE 4—(Continued)

Equation No.	ΔW	ΔP^*	ΔDiv	$\Delta(P-P^*)$	Federal Tax Receipts	State and Local Tax Receipts	Social Ins. Contr.	ΔX_u	ΔY
01	.609	.694	.076	.076	.585	.066	.035	-.135	.506
02	.615	.780	.085	.084	.545	.068	.036	-.136	.525
03	.680	.875	.096	.096	.600	.072	.040	-.151	.583
04	.476	.606	.066	.066	.414	.060	.028	-.105	.407
08	.478	.638	.070	.069	.432	.028	.028	-.106	.414
09	.478	.638	.070	.069	.432	.028	.028	-.106	.414
10	-.483	-.719	-.079	-.078	-.546	-.030	-.029	.107	-.431
11	.478	.638	.074	.069	.458	.030	.030	-.106	.438
12	6.568	-3.586	-.395	-.390	-1.002	.076	.319	-1.455	3.539
13	-.952	.997	.109	.109	.430	.016	.009	1.181	.516
14	60.808	-25.478	-2.806	-2.767	-4.726	1.091	.579	-3.082	45.619
15	1.297	-.543	-.059	-.060	-.101	.023	.012	-.066	.973
16	-.064	-.980	-.107	-.107	-.544	-.026	-.009	.014	-.211
17	-.064	.980	.107	.107	.544	.026	.009	-.014	.211
18	-.288	.651	.075	-1.038	.106	-.021	-.067	.064	-.946
19	.326	.395	1.040	.043	.497	.045	.019	-.072	1.070
20	.410	.496	.040	.054	.378	.045	.024	-.091	1.346
21	-.075	-.090	-.238	-.010	.886	-.010	-.004	.017	-.245
22	-.410	-.496	-.040	-.054	.622	-.045	-.024	.091	-1.346
24	-.064	-.980	-.107	-.107	.456	-.026	-.009	.014	-.211
25	-.064	-.980	-.107	-.107	.456	-.026	-.009	.014	-.211
26	-.075	-.090	-.238	-.010	-.114	.990	-.004	.017	-.245
27	-.064	-.980	-.107	-.107	-.544	.974	-.009	.014	-.211
28	-.410	-.497	-.040	-.054	-.378	.955	-.024	.091	-1.346
29	-.064	-.980	-.107	-.107	-.544	-.026	.991	.014	-.211
30	-.410	-.497	-.040	-.054	-.378	-.045	.976	.091	-1.346
31	.535	.661	.072	.072	.486	.059	.031	1.651	2.224
32	.303	.374	.041	.041	.274	.033	.018	.932	1.256

Projections—Continued

18	$-1.027 - .902\Delta P_f$
19	$-.0191 + .0198(P^* - T_{fc} - T_{sc} - Div)_{-1}$
20	$0 + \Delta W_G + \Delta i_G + \Delta X_f + \Delta X_s + \Delta X_{GI} - \Delta T_{op} - \Delta T_{eg} + \Delta T_{ref}$
21	0
22	$0 + .111\Delta W_G + .150\Delta i_G$
24	0
25	.012
26	0
27	0
28	$0 + .010(\Delta W_G + \Delta i_G)$
29	0
30	$0 + .129\Delta E_G$
31	$0 - .140(\Delta LF - \Delta LF_{-1})$
32	.101

use the knowns to estimate ΔPE , ΔHS , and ΔH via equations (05), (06), and (07), and then use these values, together with the other knowns, to solve the remaining equations. The inverse of the model is shown in Table 4. This is merely an enlarged version of the little table shown earlier for the illustrative model of Part I, and is used in the same way. For example, if the projected values of Table 1 are inserted in column P of Table 4, multiplied by the weights in the Automobile column and summed, the result is 4.5, the forecast increase in automobile demand shown in Table 2.¹¹ Short-run multipliers for any policy variable are readily calculated as before by inserting 1 for the variable everywhere it appears in column P and then (ignoring all terms that do not contain the variable in question) extending a forecast using the columns of Table 4.

For example, to find the multiplier on government purchases from private firms, set $\Delta g = +1$ everywhere it appears in column P. The term Δg is found in only one place: in row (11) it is multiplied by 1. To find the effect of $\Delta g = \$1$ on, say, private GNP, we multiply the weight in row (11) of the GNP column by 1:

$$\Delta G^* = 1 \times 1.304 = 1.304$$

That is to say, the short-run multiplier on government purchases is about 1.3. Similarly, the effect on, say, automobile demand is given by

$$\Delta A = 1 \times .092 = .092$$

i.e. the short-run "automobile demand multiplier" on government purchases from the private sector is .092.

In working out a policy multiplier, care must be taken to include changes in *all* exogenous variables affected by the policy action. For example, an increase in government employment involves hiring additional people [ΔE_g in rows (13) and (30)] and paying them wages [ΔW_g in rows (20), (22), and (28)]. At an average annual wage of \$5000, an addition of \$1 billion to the government wage bill will hire .2 million additional employees. To find the multipliers on government wages, therefore, we set $\Delta E_g = .2$. This gives $-.2$ in row (13) and .0258 in row (30) of column P. We also set $\Delta W_g = \$1$ to get 1 in row (20), .111 in (22) and .010 in row (28) of column P. The impact of additional government employment on private GNP is then found by extending

¹¹ To save space some of the less interesting columns of the matrix have been omitted from Table 4. Moreover the tax and transfer equations have been consolidated to show only totals for federal taxes, state and local taxes, and social insurance contributions. If values of any omitted variable are required, they can be calculated from the others. For example, to calculate the federal corporate profits tax yield, use the inverse to calculate ΔP^* and substitute this value in equation (21).

these figures by the weights in the corresponding rows of the GNP column:

$$\begin{aligned}\Delta G^* &= -.2 \times .167 + 1 \times 1.119 - .111 \times 1.119 - .010 \times 1.119 \\ &\quad - .0258 \times 1.119 \\ &= .692\end{aligned}$$

To find the effect of the action on total GNP, we must add in the additional value added by government (i.e. government wages and salaries). Thus:

$$\text{Total GNP} = .692 + 1 = 1.692$$

We also recall that government tax policy can be expressed by shifts in the equations themselves. As shown in Part I, these shift multipliers are equal to the weights found in the row of the inverse matrix that corresponds to the equation being shifted. Thus we see from the -1.119 in row (22) of the GNP column that a \$1 billion shift in the federal personal tax function will reduce private GNP by \$1.1 billion, etc. Note again [row (22) of the federal tax column] that an upward shift of \$1 billion in the federal income tax *schedule* increases federal tax *yield* by only \$622 million due to the decline in personal income and expenditure associated with the rise in taxes.

Some multiplier effects of a selection of government actions are given in Table 5. As before, once the multipliers are worked out they can be combined in any desired proportions. Thus an increase in government purchases of \$2 billion coupled with additional government wages of \$.5 billion and an upward shift of the personal tax schedule of \$1.3 billion would produce a total change in GNP of $(2 \times 1.304) + (.5 \times 1.692) + (1.3 \times -1.119) = \2 billion. The same program would raise total employment by .211 million, and add \$.67 billion to the federal deficit.

D. *A Digression on Deficit Financing*

An interesting and important conclusion to be drawn from Table 5 is that the impact of a government action cannot be measured by merely the existence, or even the size of a surplus or deficit. In the first place it makes a great deal of difference whose deficit is under discussion, and it is not always clear whether deficit "multipliers" are supposed to be applied to the federal deficit or to the consolidated government sector. In what follows we confine ourselves to the latter. In the second place, surpluses and deficits result from courses of action; they are the difference between certain expenditures and receipts. While it is elementary that expenditures promote and taxes retard economic activity, the net

TABLE 5—SELECTED MULTIPLIERS

Multiplicand	Multiplier for Impact on:												
	GNP		Employment		Tax Receipts		Social Insurance		Government Surplus or Deficit (-)				
	Private	Total	Private	Total	Federal	State and Local	Contributions	Transfers	Federal	State and Local	Social Insurance		Total
Plant & Equipment ^a	1.690	1.690	.115	.115	.586	.058	.038	— .137	.586	.058	.175	.819	
Federal Purchases from Firms	1.304	1.304	.089	.089	.458	.030	.030	— .106	— .542	.030	.136	— .376	
Federal Employment ^b	.692	1.692	.063	.263	.209	.016	.044	— .314	— .791	.016	.358	— .417	
Federal Personal Income Tax Shift	— 1.119	— 1.119	— .076	— .076	.622	— .045	— .024	.091	.622	— .045	— .115	.462	

^a Additional expenditure of \$1 billion of which half is spent for producers' durable equipment.^b Additional expenditure of \$1 billion in government wages to hire .2 million new workers.

result depends not only on the amounts of expenditures and tax yields, but also on the kinds, and we cannot speak unqualifiedly of a deficit multiplier.

Although this point can be made from purely theoretical considerations [4, pp. 133-55], the econometric model shows the substantial order of magnitudes involved. We see from Table 5, for example, that a \$1 billion consolidated deficit will result from either $\$1 \div .376 = \2.66 billion of federal government purchases or, say a cut of $\$1 \div .462 = \2.16 billion in the federal income tax schedule. Yet the former action raises total GNP by $1.304 \times 2.66 = \$3.47$ billion, while the latter generates an increase of only $1.119 \times \$2.16 = \2.42 billion.

This result can be generalized. According to the multipliers in the last column of Table 5, the consolidated balance (surplus or deficit) is given by

$$\Delta b = - .376\Delta g + .462\Delta a$$

where Δb is the change in the balance and Δa is the shift in the federal income tax schedule. A wide range of combinations of expenditures and taxes will produce the same budgetary balance. In fact, if we set Δb at some fixed value, say $\Delta b = 2$, then

$$2 = - .376\Delta g + .462\Delta a$$

is the equation of an "isobalance" locus. That is, every combination of expenditures and taxation that satisfies this equation produces a \$2 billion increase in consolidated surplus. Three isobalance lines—corresponding to a \$1 billion surplus, a balanced budget and a \$1 billion deficit—are plotted as solid lines in Figure 2.

By the same token, the increase in total GNP is given by:

$$\Delta GNP = 1.304\Delta g - 1.119\Delta a,$$

and if we assign, say $\Delta GNP = 5$, then

$$5 = 1.304\Delta g - 1.119\Delta a$$

is the equation of an "iso-GNP" locus. Three of these are plotted as broken lines in Figure 2.

Inspection of the figure immediately shows that any specified increase in GNP can be attained in association with a wide range of balances and that any deficit or surplus may be associated with a wide range of impacts on GNP. In fact, a government program can simultaneously generate a substantial deficit and a sharp deflation, or a substantial surplus and general expansion. Since transfers, corporate profits taxes, defense orders, and government employment will have still other isobalance and iso-GNP lines, this merely scratches the surface of the possibilities.

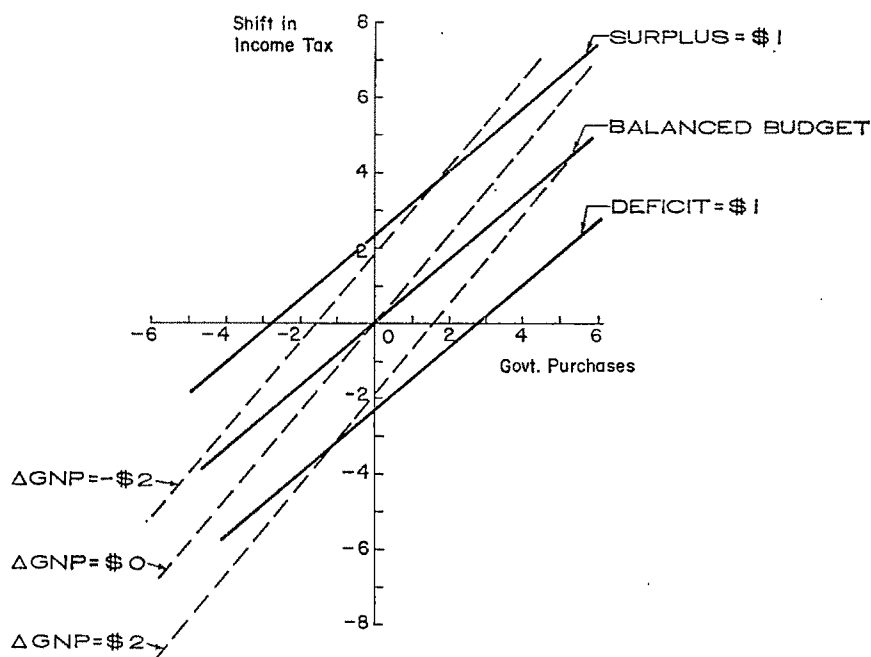


FIGURE 2. RELATIONSHIP OF GNP AND DEFICIT TO GOVERNMENT PURCHASES AND LEVEL OF PERSONAL TAXES

E. *Dynamic Responses and Long-Run Multipliers*

As shown in Part I, dynamic responses are studied by iteration. Among the initial impacts of any program, we must find the effects on automobile demand, inventory accumulation, plant and equipment, and other variables whose values re-enter the system with a lag. These form a set of additional knowns for the next year. Using these values, in turn, gives rise to another set, etc. Repeating this operation enables us to follow the implications of a given program over as long a period as desired. It appears, however, that the dynamic elements stabilize by the end of the fifth year, and the system can be treated as in equilibrium after five iterations.

A complete study of the dynamic behavior of each variable in response to each possible policy action cannot be presented here, but Table 6 shows the response of the GNP and its components to a permanent increase of \$1 billion in government expenditure. The tabulated figures are the values of the variables measured as deviations from their levels as of year 0 before the shift in expenditure policy.

In response to increased government expenditure, the GNP rises by \$1.3 billion the first year and under the stimulation of the dynamic factors climbs to a maximum of \$1.6 billion over its initial level. It declines

TABLE 6—DYNAMIC RESPONSES TO A PERMANENT INCREASE OF \$1 BILLION IN GOVERNMENT EXPENDITURE

(Tabulated figures are deviations from initial levels)

	Year				
	1	2	3	4	5
Gross National Product ^a	1.304	1.619	1.582	1.545	1.335
Automobiles and parts	.092	.088	.050	.042	.014
Other Durables	.073	.104	.113	.117	.104
Nondurables	.093	.159	.193	.215	.213
Services	.037	.075	.104	.126	.134
Plant and Equipment	0.	.186	.173	.133	.082
Inventory					
Durable Goods	.048	.079	.017	— .010	— .031
Nondurable Goods	.040	.023	.012	.008	— .002
Net Foreign Investment	— .078	— .101	— .103	— .103	— .098
Government Purchases	1.	1.	1.	1.	1.

^a Detail may not add to total because of rounding.

thereafter under the back-pressure of accumulating stocks. The behavior of the individual components is in keeping with their respective natures. Automobile demand rises immediately to its maximum and declines slowly as the stock of cars on the road accumulates. Consumer expenditure for durables rises sharply and levels off, while outlays on nondurable goods and services continue to rise throughout the period, although at declining rates.

Investment in plant and equipment spurts in response to the immediate improvement in corporate profits and tapers off as the new plant becomes available. Inventory accumulation occurs at a high rate, but durable inventory overshoots and the rate of accumulation is forced somewhat below the year 0 level.

IV. Conclusion

To approximate the behavior of a complex economy by a set of 32 linear approximations is a heroic simplification. Yet experience has shown the statistical model to be a useful and flexible device for economic forecasting. Moreover, while the system of equations is small in relation to the vast structure of pure theory, it is considerably more elaborate than other devices that can be brought to bear on a practical level. Indeed, if an econometric model is nothing else, it is a highly sophisticated method of observing the past operation of the economy and systematizing the information obtained.

Yet, once the technical work of constructing the model is completed, a competent economist needs little more than a knowledge of elementary algebra to understand its nature, or to apply it to a wide range of ana-

lytical problems. Properly used, the model provides quantitative estimates of economic responses to specified changes in conditions. It goes without saying that the accuracy of these estimates is below the level that might be inferred from the precision of their statement in the text. But they show the proper order of magnitude involved and fall well within the practical tolerances required for effective policy evaluation.

REFERENCES

1. A. S. GOLDBERGER, *Impact Multipliers and Dynamic Properties of the Klein-Goldberger Model*. Amsterdam 1959.
2. J. M. GUTTENTAG, "The Short Cycle in Residential Construction," *Am. Econ. Rev.*, June 1961, 31, 275-98.
3. L. R. KLEIN AND A. S. GOLDBERGER, *An Econometric Model of the United States, 1929-1952*. Amsterdam 1955.
4. P. A. SAMUELSON, "The Simple Mathematics of Income Determination," in *Income, Employment and Public Policy: Essays in Honor of Alvin Hansen*, New York 1948.
5. D. B. SUITS, "The Demand for New Automobiles in the United States 1929-1956," *Rev. Econ. Stat.*, Aug. 1958, 40, 273-80.
6. M. L. WEIDENBAUM, *Government Spending: Process and Measurement*. Seattle, The Boeing Co., 1958.

WELFARE CRITERIA AND CHANGING TASTES

By RICHARD S. WECKSTEIN*

Conventionally, individual economic welfare depends on individual real income, and changes in economic welfare are evaluated on the assumption that individual tastes remain fixed. The evaluation of well-being when tastes have changed has not been satisfactorily dealt with, and very little is known about the conditions of taste-change. In this paper I deal with those situations in which individual tastes do change, not only as a result of changes in the autonomous cultural determinants of taste, but as a result of ordinary economic activity in which income is gained and used in response to existing tastes.

The assumption that tastes are largely stable over time and between people, is, it seems to me, unwarranted. Consider the following:

1. Utterly implausible contrasts in the conditions of well-being are implied by available real-income measures of welfare in the comparison of people of an industrial society with people of a pre-industrial society. Even though such income comparisons are understood to imply no more than an ordinal standard, or a ranking of societies, it is not at all clear that the Balinese, for example, are so much worse off than the average American that the average of all Europeans and most South Americans can safely be fitted between them on a welfare scale. The customary disclaimer of taste comparability in making international comparisons such as these fails to deal adequately with the difficulty. The trouble is that the Balinese may be *better* off than many groups higher on the real-income scale; this can very well be so even if "well-offness" is confined to economic welfare. For economic welfare is a measure of the degree to which *given tastes* are satisfied by means of scarce resources. I am not concerned here with spiritual qualities, but with tastes which change in some kind of systematic way.

2. The second reason for suspecting that tastes do not stay put is that often the very policies and other reorganizations which produce significant changes in real income are themselves responsible for changes in tastes.¹ For example, the process of planning for a rise in

* The author is assistant professor of economics at Williams College. The first draft of this paper was written while I was a participant in a Ford Foundation Faculty Research Seminar. I have benefited from comments of William Vickrey and Jerome Rothenberg.

¹ It may also work the other way around; that is, new policies designed to produce increases in real income are adopted only after a change in taste has occurred which makes the old level of real income less satisfactory.

income at some given rate in a poor country is quite likely to stimulate the popular appetite.

It is a complicated matter to judge the relative welfare of two such situations. Schoeffler's solution [12, p. 885] to the problem is to attribute equal significance to each of the two taste-states, and, using both, to apply a dual criterion before concluding that an improvement has occurred. If one of the two situations is not preferred to the other under the tastes of *both* situations, no welfare conclusion is possible.

How can it be relevant to use a standard of judgment which is based in part on nonexistent tastes? Moreover, in those, not unlikely, cases in which two taste-states are inconsistent with each other, it is logically impossible for this dual standard to indicate any preference between the two situations. A judgment of "no verdict" of this kind is not simply due to ignorance; it is a positive statement that under the circumstances it is meaningless to make comparisons.²

My proposal for dealing with the problem of the welfare evaluation of income when tastes change is set forth in the following sections. In Section I a new aspiration-welfare concept is introduced. The principal influence to which the aspiration component of welfare is subject and the way aspiration and income interact with each other are discussed in Section II. The distinction between, and the exact nature of, the relation between income and welfare is the subject of Section III. The results of the analysis are then used to develop a critique of income distribution policies in Section IV, and advertising and education policies in Section V. Finally, in Section VI, the effect that experience has on the demand schedule and the welfare interpretation of demand are taken up once again.

I. *The Aspiration-Welfare Function*

In order to avoid the inadequacies of the conventional definition of economic welfare, in which income and economic welfare are loosely synonymous, I propose to assert that economic welfare depends on both real income and the *level of aspiration*³ for real income. The rela-

² I shall return to this question in Section VI below.

³ The idea of an aspiration level of income occurs in Marshall's analysis of saving [8, Bk. iv, Ch. 7 §9] although the term "aspiration" is not used and there is no allowance for aspiration change. Keynes restates Marshall's argument [6, p. 93] in order to cast doubt on any consistent interest-saving relation. The development of a variable aspiration-level concept and its application to the effects of the rate of interest in [13] raises doubts about Marshall's generalization and suggests substitute conclusions. Another application of the concept of economic aspiration in the analysis of the problem of political behavior is due to C. Wolf [14, pp. 296-351]. Wolf's work came to my attention after my own was essentially complete. There are, moreover, important differences between the two concepts in the uses made of the level of aspiration and the influences which affect it.

tion is such that welfare is greater whenever real income rises and whenever the level of aspiration declines.⁴ The aspiration level of income is a more-or-less unrealized level of income which serves as an individual standard and is measured in the same terms as actual income. The steps required to measure aspiration income are however different from those which are taken to measure actual income, but this difference does not prevent us from using the theoretical concepts together. Under ordinary conditions and for most people the level of aspiration for income will exceed real income and real income will be a lower bound to aspiration. Under some circumstances real income might be greater than the level of aspiration, but it is likely that such a situation will be an unstable position of the two values, for either there will be an increase in the aspiration level or real income will simply be allowed to decline.

The situation in which the level of aspiration and real income have equal values provides a kind of universal bench-mark which is given the name Bliss, from which all other states of welfare are measured.⁵ And because there is no special advantage in being better off than you want to be, the only gap between aspiration and income to be considered is the gap between an inspiration level which is high relative to income. The larger is this gap, the further one is from Bliss. Therefore, *ceteris paribus*, the higher the level of aspiration and the lower real income, the lower is economic welfare.⁶

The character of the individual welfare function is represented in

⁴ Let W be economic welfare, A the level of economic aspiration, and E real income, then

$$W = \phi(A, E); \quad \frac{\partial \phi}{\partial A} < 0, \quad \text{and} \quad \frac{\partial \phi}{\partial E} > 0.$$

⁵ In a sense this is an exaggeration, for there are people for whom the values in life are associated with striving activity. For them "the game of life" is the *pursuit* of a goal, not reaching it. Such people are presumably most well off when there is some degree of tension between goals and achievement.

It would be possible to increase the generality of the bench-mark referred to in the text by allowing W to reach a maximum when A and E have a particular relation other than equality. Thus Bliss—if such a term can be used for pursuit-motivated types—is defined as occurring when $A = kE$, $k > 1$, and taking different values for each individual. Such a maximum exists if the partial derivatives of the preceding footnote continue to apply. That is, a maximum exists if pursuit after a more distant goal is not always better than pursuit after a closer one. But it complicates the argument to increase generality in this way. And if my simple definition of welfare fails to satisfy this Knightian criticism it is certainly no weaker on this account than the conventional definition of welfare in which it is not even apparent how to express the tension between aspiration and achievement.

⁶ The simplest expression for this basic idea is: $W = B - K(A - E)$, where B is Bliss and $(A - E) \geq 0$. K is a constant of disutility. An alternate form of the welfare function is $W = B(E/A)^k$, which removes the scale effect, i.e. welfare is taken to be independent of the distance from any absolute magnitude such as subsistence.

Figure 1. The convexity of the function, in this version, is a reflection of the Weber-Fechner law [1, pp. 267-68] which says that uniform

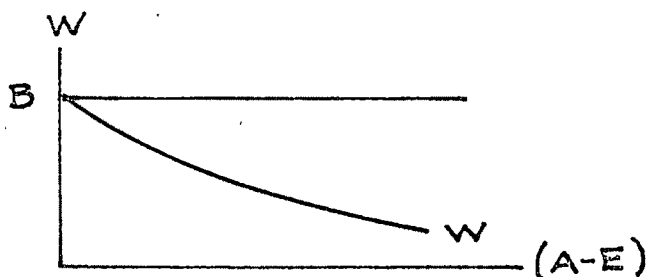


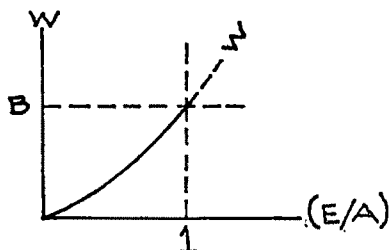
FIGURE 1

increases in the stimulus or source of sensation—in this case the separation of actual income from aspiration income—are accompanied by diminishing increases in painfulness.⁷

The conventional notion of welfare is a special case of the present welfare function, in which aspirations are set rigidly at a high level. In order to make the aspiration-welfare function consistent with the assumption of diminishing marginal utility it would be necessary to draw the curve in Figure 1 concave to the origin. Which way is correct seems to depend on whether to devote attention to the positive pleasure of additional consumption, or to the pain of the lack of it. Perhaps the difference depends on whether individuals measure their state of well-being from a zero income level, in which case it is proper to think of marginal utility as diminishing, or whether individuals measure their condition downward from a bliss point, in which case it seems correct to think instead of a kind of diminishing *dis*utility as the aspiration-income gap widens.⁸

⁷ The welfare expression can be modified, $W = B - (A - E)^m$, where $0 < m < 1$, to conform to this curvilinearity.

⁸ Geometric representation of the alternative form of the welfare function $W = B(E/A)^k$ produces a similarly convex shape. The portion of the curve to the right of the value $(E/A) = 1$



is drawn dotted indicating the special nature of the region. Either W is undefined for $(E/A) \geq 1$ or we can say $E > A$ is redundant and does not raise W above B .

A particular consequence of this definition of welfare which may be disturbing to one's intuition is that it requires Bliss at low-income levels to be as satisfying as Bliss at high-income levels! One who views the condition of the (relatively) poor may find it difficult to believe that people with much less are not in every sense less well-off. I am inclined nevertheless to insist on the conclusion that Bliss is Bliss regardless of the level of income at which it occurs. I have two reasons for doing so. In the first place there is a personal bias that colors one's view of the (relatively) poor which comes from appraising others' incomes against the standard of one's own aspirations. This bias is implicit in many conventional economic-welfare judgments, and it seems to me to be both indefensible and in fact without defenders. This is merely shoddy practice, not doctrine. But, in the second place, if it is true that some of the elements which constitute one's own aspirations are in a sense universal and affect the tastes of the poor, so that it is at least partly appropriate to view the situation of the (relatively) poor through one's own aspiration biases, then Bliss may indeed be *less accessible* to the poor than to the rich. But in that case it is still perfectly plausible and correct to assert that *if* Bliss is achieved at a low income it is equivalent in welfare to Bliss at high income.

It should be clear that the meaning of the level of aspiration is different from both real income and "expected income." The latter may either be considered to be part of real income, or else we may mean by real income some notion such as "permanent income"[3]. Measurement of the level of aspiration will depend on how precisely it is defined operationally. We may approach it either by imagining a set of direct questions and answers designed to obtain the information needed to scale the level of aspiration, or we may replace the level of aspiration by a proxy variable easily measured and which we believe to be a satisfactory index of the level of aspiration. This, however, is a problem to which a solution is not necessary in order to proceed to the matter of the determinants of the level of aspiration.

II. *Determinants of the Level of Aspiration*

A. *Cultural Determinants*

It is ironical that for so important a characteristic of a people as their aspirations the most powerful influences should also be the least accessible to anything like direct control. Taking people in culture groups one with another it is apparent that it is the entire web of their lives from objective family relationships to their attitudes toward themselves which is of greatest importance in setting particular aspiration levels. Thus there is a broad difference in the level of economic aspiration between a Chinese trader in Indonesia and a non-Chinese

Indonesian. Apart from the difference in levels of aspiration between culture groups it is also probably true that individuals in some culture groups are more responsive to the transient influences which are responsible for the shifts in aspiration levels. I shall discuss these influences presently.

It would be a task for an anthropologist to chart the connections between cultures and aspiration characteristics. And it would be immensely worth while to have developed a culture model capable of stating analytic connections between particular aspects of a culture and the sensitivity of aspirations. Without a good deal more knowledge of this kind we will continue to take nations and countries as they are in so far as aspiration motivation goes; and we will have fairly limited ability to affect this set of attitudes, the nature of which is undoubtedly important to their economic development.

B. Turning-Point Experiences

The history of every society includes great events which have given a new start or new direction to the aspirations of its members. Although such historical episodes are often most influential, they are usually outside the conscious control of policy-makers. The Second World War produced many conditions which have proved to be aspiration-stimulating: in the United States, for greater equality and participation in political life by Negroes; in Southern Asia and Africa, for national independence. Aspiration-depressing conditions were widely produced by the severe depression of the 1930's. These events are important in the history of nations, but they are so big and complex that they are not really useful in understanding the mechanism with which we are concerned. For the purpose of understanding the dependence of aspiration levels on events it is useful to consider more limited determinants, especially because these are also controllable.

C. The Communication Media

The spread of literacy is as important in setting aspirations as is any single event, for it brings in its wake a constant flow of printed information about new ways of life which gain prestige and attractiveness when cast in a literary context. In appraising the influences affecting consumer demand, too much attention can be given to paid-for advertising and too little to the informal "advertising" which gives prominence to the material style of life of fictional characters of literature and films. The visual arts, too, have made their impressions on the aristocratic and popular levels of aspiration. Thus the history of art during the Italian Renaissance can be viewed as a colossal adver-

tising campaign for the value of life on earth directed toward people customarily imbued with the value of life hereafter.

D. *Demonstration Effect*

The Duesenberry demonstration effect fits comfortably within the aspiration-level framework if we recognize that it is aspirations for particular income standards which are affected by exposure to examples set by others. We may express this mechanism by relating an individual's level of aspiration to the difference between the mean income of society and the income of the individual. Those whose income is greater than the social mean will, on this account, have a lower level of aspiration, while those below the mean will have a higher aspiration level than they otherwise would.⁹ A strongly class-divided society might require treatment different from a more open society. I shall return to this in Section IV below.

E. *Consumption Effects*

Finally, among the influences acting on aspiration levels is the process of stimulating new wants by satisfying old ones. This phenomenon is given much importance by J. K. Mehta [10, pp. 15-21]. He distinguishes between conscious and unconscious wants, the former being responsible for pain which is relieved in want satisfaction. The latter are only latent wants, and so long as they are not brought to consciousness they produce no pain. But the satisfaction of conscious wants carries with it the satisfaction of related unconscious wants, leading to a kind of net utility gain or consumer's surplus. This is a widespread phenomenon. For example, hunger satisfied by eating rare steak uncovers an unconscious want in particular for rare steak. Initially, eating rare steak does more than merely satisfy hunger and thus makes one better off than before hunger set in. Unfortunately, however, once unconscious wants have been brought to consciousness, they recur, produce pain, and demand recurrent satisfaction. And they are no longer a source of a surplus after their first discovery. Owing to the fact that unconscious wants abound, to seek "salvation" through consumption is in this view a losing proposition.¹⁰ An extreme ex-

⁹ In so far as aspirations are the result of the demonstration effect they can be expressed thus: $A = f(\bar{E} - E_i)$ where E is the economic level; for the i th individual (E_i) and for the arithmetic mean (\bar{E}) of everyone in the society within which social contact occurs.

¹⁰ In aspiration-level terminology this amounts to saying that

$$\frac{dA}{dt} = f\left(\frac{dF}{dt}\right) \text{ and that } \frac{dA}{dt} > \frac{dE}{dt},$$

where A is taken to mean the extent of conscious wants and E the current available economic means of satisfying them.

ample of this phenomenon is learning to smoke, especially marijuana.

Although this conclusion is consistent with the conventional view of endlessly expansible wants, there is some doubt that aspiration levels in fact generally behave in so simple a way. One result of work on the level of aspiration is the discovery that the occurrence of success or of failure to achieve previously set goals is an important determinant of the aspiration level [1, pp. 337-39]. The expansion of wants is not only the result of exposure to goods, it is more the result of discovering that these goods are within reach. As the ability to reach grows, the normal (although not universal) pattern is to set higher goals or levels of aspirations. The difference between this mechanism and the Mehta one is emphasized by the fact that the aspiration shift operates in both directions—levels of aspiration contract in consequence of failure, or declining ability relative to previously set levels of aspiration. A second difference is that new income levels induce adjustments in the level of aspiration toward an equilibrium position instead of inducing an endless expansion of wants.

The level of income is valued in relation to the level of aspiration. A range of income adjacent to the level of aspiration is regarded as a range of successful income in the sense that income in that range represents either a satisfactory approximation to, or satisfactory progress toward the level of aspiration. Below that range, income is regarded as being in a range of failure. Between these two ranges, at the borderline, income is neutral, and the difference between the level of aspiration and that level of income is called the neutral aspiration-income gap, or simply the neutral gap.

Aspiration adjustment responds to the perception of success or failure. The level of aspiration is raised in response to the occurrence of income in the success range; it is lowered in response to income in the failure range, and it remains unchanged in response to the neutral income. The amount of the adjustment is related to the degree of success or failure. In the neighborhood of the neutral income the amount of aspiration shift gradually falls to zero as incomes approach the neutral income from both the success side and the failure side.

Assume a given initial income which is determined by a person's skills and opportunities, and which falls in the range of successful income. Such an income results in the setting of a new, higher level of aspiration in the succeeding period. But with income continuing unchanged this income is then regarded as less successful relative to the new, higher level of aspiration. If the aspiration shift was small so that the given level of income is not below the neutral income level, relative to the new level of aspiration, then again the perception of success induces further rises in the level of aspiration. However, the adjust-

ments diminish and the level of aspiration tends toward an equilibrium value above actual income such that the distance between them is equal to the neutral gap.¹¹

This equilibrium relationship between the level of aspiration and income will normally set aspiration some amount above income. The cases in which the two values coincide probably will be rare. If they do coincide, Bliss is an equilibrium result. In order for this to be the case, however, the aspiration shift must be zero when income and aspiration coincide. For most people Bliss is a disequilibrium point at which the level of aspiration is raised and Bliss is lost.

Equilibrium, in more complicated cases, may be approached by a series of oscillatory movements of the level of aspiration, first rising in response to success so that a given level of income is now in the failure range, then falling so that income is in the success range relative to the level of aspiration. Even this adjustment pattern may lead to equilibrium if the oscillations are damped. But individuals whose pattern of aspiration adjustment is unstable will either grow steadily more disappointed by a sense of failure because of continually increasing aspiration levels, or they will alternately go from failure to success, each time feeling a heightened sense of whichever state they are in at the time.

Unstable cases of these kinds are probably not very important. But it is important to consider another kind of adjustment which has so far been neglected. Until now it has been assumed that income is determined autonomously with respect to the aspiration-shift mechanism. This will not be so in the general run of cases; hence it is necessary to ask how income is changed and what effects such changes produce. An individual's income is not quite fixed by his endowment and the amount of leisure he chooses to give up. To some degree income responds to the effort devoted to creating income. And effort is undoubtedly related to the incentive of a level of aspiration which is high or low relative to income.

The incentive influence of a level of aspiration above income may be responsible for a variety of activities which increase income, such as harder work for longer hours, allocation of income to investment rather than consumption, and a greater willingness to accept reorganizations designed to raise output. The effectiveness of these activities in raising income is likely to fall short of shifts in the level of aspiration. Income adjustment operates simultaneously with the adjustment in the level of

¹¹ The level of aspiration in the current period is:

$$(1) \quad A(t) = A(t-1) + \alpha\{G - [A(t-1) - E(t-1)]\},$$

where G is the value of the neutral aspiration-income gap, and α is the aspiration-adjustment coefficient.

aspiration that occurs in response to success or failure experiences. The opportunity for change in the level of income in response to the incentive of an aspiration-income gap establishes a pattern of steady growth of income; for a persistent gap serves as a constant incentive. The aspiration-adjustment relation which brings aspirations into a neutral relation to income therefore also sets aspiration levels on a path of steady growth.¹² The rate of aspiration growth depends on the strength of both the aspiration-shift and the income-shift, and the size of the neutral aspiration-income gap. The growth rate of income approaches the growth rate of aspirations after an initial time of adjustment. Steady, equal growth of income and aspiration imply neither welfare gain nor loss. However, during early periods, when major adjustments in aspiration and income are taking place, welfare shifts do occur as a consequence of gap values which temporarily diverge from the neutral value.

The importance of the income response in establishing the rate of growth of income and aspirations requires that an effort be made to account for its strength. Although large differences in incentives exist among people, from which much might be learned, the intensity of incentives for any single individual is our only concern here. The strength of the income-increasing effect rises as the incentive of an aspiration-income gap increases, but the relation between these two breaks down and reverses when extended too far.¹³ The reason for this is that aspiration levels greatly in excess of income begin to appear unrealistic and therefore lose their effectiveness. Possible also, high relative aspiration levels are accompanied by severe risk of failure which is avoided by reducing economic effort of all kinds.

¹² The level of income in the current period is:

$$(2) \quad E(t) = E(t-1) + \beta[A(t-1) - E(t-1)],$$

where β is the income adjustment coefficient; its value is assumed to be less than α . Solving equation (1), footnote 11, and equation (2) simultaneously, we get:

$$(3) \quad A(t) = C_1 + C_2(1 - \alpha - \beta)^t + \left(\frac{\alpha\beta}{\alpha + \beta}\right)tG,$$

and

$$(4) \quad E(t) = C_3 - \left(\frac{\alpha}{\alpha + \beta}\right)G + \frac{C_4\beta}{\alpha}(1 - \alpha - \beta)^t + \left(\frac{\alpha\beta}{\alpha + \beta}\right)tG.$$

When t is large the value of A in equation (3) is dominated by the third term, and the value of E in equation (4) is dominated by the fourth term. These identical terms determine the growth path of A and E . While t is still small the adjustment terms—with t exponents—bring A and E into neutral relation to one another. The values of the constant C terms depend on initial values which result from arbitrary external events, so they may be ignored here.

¹³ “. . . there would appear to be a curvilinear relationship between motivational intensity and the efficiency of performance” [9, p. 483].

It is apparent, then, that the strength of the income shift in the course of a long period of time will depend on the size of the aspiration-income gap which tends to persist after initial changes have occurred. This value toward which the gap tends is the neutral value, and hence, finally, we must consider what it is that sets its size. Recall that levels of income which are less than the neutral income are considered to be failures, and the response is a subsequent lowering of aspiration. When income is above neutral income, a success has occurred and this raises aspirations. The size of the neutral aspiration-income gap is critical. If the income-incentive effect is weak due to a small neutral gap, strengthening it requires that the size of the neutral gap be increased, and this requires that a more tolerant view be taken of income performance. A larger range of income must be accepted as successful than had been accepted as successful before. If this is done, the stable gap value toward which adjustments are made will be larger and the incentive aspect of a level of aspiration above income will be greater.

If, however, the incentive effect is small because the neutral aspiration-income gap is very large and serves only to demoralize and dissipate action, the way to achieve more rapid growth is to reduce the size of the neutral gap, bringing it into the range where it serves effectively as an incentive to economic effort. To do this, an individual or society must view more critically the quality of income performance and by so doing restrain the upward adjustment of aspiration which excessive tolerance encouraged.

Thus there are two kinds of stationary, or slow-growth, societies. One of these is the product of small neutral-aspiration-income gaps. In this extreme case a failure to raise aspirations deprives the society of strong incentives. Yet this is a society of high welfare. The other kind of stagnant society is the product of an excessively strong tendency to raise aspirations. As a result the large neutral gap prevents growth and imposes a state of low welfare. The policy implications for the latter societies (and individuals) is to lower their aspirations relative to their income in order both to grow more rapidly and to achieve greater welfare. But the former societies (and individuals) present a more puzzling policy choice, for the achievement of rapid growth must be at the cost of a loss of welfare. And it certainly is not always better to grow than to be well off. This is clear once the mental habit is broken of accepting uncritically the belief that Blissful Communism will be reached at the end of economic development, where abundance guarantees to each all his "needs."

III. *Income and Welfare*

It is so much a matter of habit for economists to equate income

and welfare that it is important to make it clear that they are not the same thing, that they are in fact alternatives for one another. The confusion arises as a result of the common assumption that tastes are constant while income changes, from which it follows that a change in income implies a change in welfare in the same direction. However, the nature of the dependence of income on welfare and welfare on income makes it dangerous always to make this assumption. For, in general to maximize income as a goal implies a sacrifice of welfare. And, ironically, the pursuit of welfare, on the other hand, may require a sacrifice of income.

This is so because efforts directed toward the maximization of income will, to be effective, make use of available means to raise incentives. The manipulation of aspirations to encourage income-increasing efforts may therefore be a required part of the income-maximizing program. If aspirations fail to rise at least as rapidly as incomes, a continuing rise of income is made more difficult by the resulting depression of incentives. Thus there is an opportunity to maximize income (statically) or to raise the income growth rate (dynamically) by allowing welfare to decline. On the other hand, the pursuit of welfare, by holding down the level of aspiration, or its rate of growth, must contribute to a level of income less than a maximum, or to a reduced rate of growth of income. How is this significant?

National policy sometimes must choose between welfare as it pertains to individuals based on the relation between aspiration and income, and other national goals such as national prestige or military security. Although it might formally be possible to subsume both of these national policy objectives in a single social welfare function, to do so serves only to conceal the nature of the choice which must be made. If these goals are kept separate, it is apparent that we are faced with an optimizing problem. In order to simplify the problem I assume that many national goals, other than welfare, are directly related to the level of national income so that we must choose between income and welfare. The choice can be expressed geometrically.

In Figure 2a Bliss lies along the 45° line and income can be controlled along the curved line labeled E -incentive. The theoretical limits to movements along the line are set at the left end by the achievement of Bliss (E_c) and at the right by an upper bound to income (E_m) which can be gained through manipulation of aspiration-level determinants. Practical limits may lie within these limits as a consequence of the difficulties of manipulating aspiration determinants. The increasingly flat slope of the E -incentive curve reflects the weakening stimulus of an increasing aspiration-income gap [9, p. 483]. But

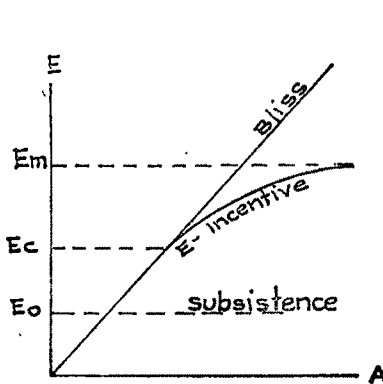


FIGURE 2a

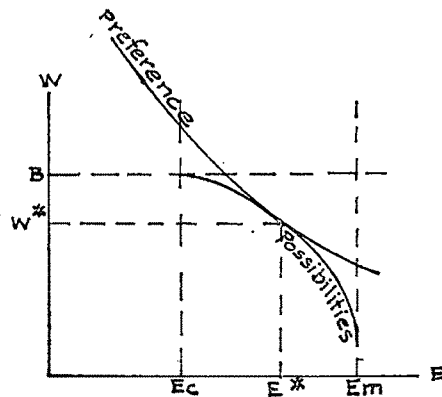


FIGURE 2b

raising income by manipulation of aspiration incentives puts the society at a greater distance from the Bliss line.

This technical relation between aspiration and income may be used to obtain an expression of the relation between income and welfare. In Figure 2a the distance between the E -incentive curve and the Bliss line (measured along a perpendicular to the Bliss line) is a measure of welfare associated with income levels achieved by varying aspirations. The locus of welfare and income combinations is drawn in Figure 2b. It is apparent that they are technical substitutes for each other, i.e., higher incomes (welfare) can be gained by the sacrifice of welfare (income). Moreover, the concave (from below) shape of this possibilities curve is due to the worsening terms on which the exchange of income for welfare proceeds. This is a reflection of the weakening stimulus which larger aspiration-income gaps provide to income and production.

The government's choice between the two goals is made on the basis of its preference map, one contour of which is drawn in Figure 2b. The combination of welfare and income which is optimal for policy-makers with this set of preferences occurs at the point of tangency of the two curves in Figure 2b (W^* , E^*).¹⁴

IV. Distribution of Income

An important issue to which the aspiration-welfare criterion applies is the distribution of income. It is assumed that for each individual the level of aspiration is determined, *inter alia*, by the influence of the income level of everybody else in the society via the demonstration effect.

¹⁴ At (W^* , E^*) the marginal rate of substitution between income and welfare equals the marginal technical rate of transformation between income and welfare.

The presence of relatively rich individuals pulls the level of aspiration of all those below upward, and symmetrically those with lower incomes pull the level of aspiration of those above them down. The strength of the aspiration-shifting influence may be proportional to income differences for the entire range of incomes or it may in some cases follow a square-root rule with extreme incomes losing the intensity of influence as the perception of such extremes grows dim. Another, and possibly more realistic, rule relating income differences and aspiration levels in a class-bound society would discriminate the impact of income differences depending on the class position of the income recipients. Thus, if in a classless society the demonstration effect is expressed as $A_i = f(\bar{E} - E_i)$ for the i th individual (where

$$\frac{df}{d(\bar{E} - E_i)} > 0),$$

then for a class society we may write:

$$A_i = f[a(\bar{E}_\alpha - E_i) + b(\bar{E}_\beta - E_i) + c(\bar{E}_\gamma - E_i) + \dots]$$

where a, b, \dots are weights assigned to the differences for each class, and the subscripts α, β, \dots designate the income averages for each of the corresponding classes. In a class society in which people take their class position very much for granted, the coefficients for the other classes might be small. And in an extreme case hardly anyone might bother to compare himself to the royal family. On the other hand, in societies with pretensions of classlessness the coefficients might be more nearly equal; hence the aspirations of the poorest would be most cruelly raised.

The immediate welfare implication of inequality in the distribution of income on this view of the relationship of members of a society is a neutral one. For it holds that each individual whose income is above average and whose existence serves to raise the aspirations and lower the welfare of those below him, *mutatis mutandis* has his own aspirations lowered and his welfare raised. It matters not at all what the particular pattern of income distribution may be, one distribution has no higher status than another. This conclusion may seem harsh and it may raise our resistance against the arguments which led to it, but it follows from the assumptions that we can add the welfare gains and losses of different members of society with equal weight, and that the influence of demonstration on others' aspirations is symmetrical upwards and downwards. If we deny the first of these assumptions and assert that gains to the poor have greater social value than the corresponding losses of the rich it is easy to avoid the conclusion. However, to attribute a greater value to gains of the low-income receivers is not

justified by any obviously larger aspiration-income gap of such individuals. Unless we hold the view that there is some biologically established minimum to the level of aspirations which keeps the aspiration-income gaps of the poor large, the preference for equality must depend on a social-value rule which establishes the weight of low-income gains above high-income gains (or losses). And we should not be disappointed to discover that the preference for equality is not a consequence of an analysis which omits the relevant value premises. To deny the second assumption, that demonstration works symmetrically, would require a sociological view at odds with much that has been said on the issue by Veblen and his followers. Such a view is likely not to seem the simpler or more natural of the two alternative assumptions.

Suppose now that we are instructed by society to equalize well-being among the members of society, what kind of income distribution is it appropriate to seek? In the short run—or in the situation in which it may be assumed that aspiration levels are constant—it is appropriate to increase the income of those whose marginal benefits from income are greatest at the expense of those with least marginal benefits from income. The benefit from a little more income will be greatest for those whose aspiration-income gap is small. It does not seem justified—assuming aspirations to be fixed—simply to equalize incomes. Over time—allowing for shifts in levels of aspiration as a part of distribution policy—there should be no such welfare restrictions on the policy of redistribution. For social Bliss can be approached by a combination of policies which influence the distribution of aspirations as well as the distribution of income, and what matters is the distribution of the relationship between aspiration and income.

Moreover, aspiration levels respond *inter alia* to changes in incomes and it is therefore inappropriate for social policy to accept as given the distribution of aspirations to which to fit an income distribution. It would be no less satisfactory to attempt to adjust the social distribution of aspirations to suit a given distribution of income. To some degree the spontaneous adjustments of incomes and aspirations of societies achieve a matching of aspirations and income that may, at least in some sufficiently fluid cases, produce a tolerably good arrangement. It has often been observed about able but relatively impecunious individuals that they lack a strong (enough) desire for money. And it is a commonplace that the tastes of the poor are coarse. It is possible in fact that for many of us the objection we have to inequality is precisely that we are offended by a world in which so many have coarse tastes, and it is by raising the incomes of the poor that the tastes of the poor can be elevated. In any event, there is one too many degrees of freedom in the variables to allow an economic definition of the opti-

imum income distribution. When aspiration levels are free to shift, the ideal distribution of income is a matter of social ethics rather than welfare calculus.

V. Advertising and Education

The aspiration-welfare criterion is also relevant to judgments about advertising. Observations of economists about advertising have been directed toward its impact on efficiency in the operation of markets—on the role of advertising in providing information on the one hand and in directing tastes on the other. Advertising, however, enters directly into the determinants of welfare via its influence on the level of aspiration.¹⁵ If advertising did not affect the level of real income we would simply conclude that advertising reduces welfare. But advertising does increase real income by providing consumer information about a wider range of goods and, by subjecting households to temptation of further consumption, provides a heightened incentive to increase their offers to produce. This dual effect makes simple judgments doubtful. Without overlooking this difficulty it is possible, by taking both kinds of influences into account, to define a socially optimal quantity of advertising.¹⁶ This is done in Figure 3 in which the two effects of advertising are described geometrically.

The relation between income and advertising expenditures is shown by an E -function which reveals the potential for increasing income by improving the efficiency of marketing through advertising. As advertising expenditures increase, this potentiality is eventually exhausted and

¹⁵ Thus, $A = f(Ad, \dots)$ where

$$\frac{\partial f}{\partial (Ad)} > 0.$$

¹⁶ $W = \phi(A - E)$ and if $\phi' = \frac{dW}{d(A - E)}$, then $\frac{dW}{d(Ad)} = \frac{\phi'(A - E)}{d(Ad)}$.

But
$$\frac{d(A - E)}{d(Ad)} = \frac{dA}{d(Ad)} - \frac{dE}{d(Ad)},$$

and, if we neglect the influence of E on A ,

$$\frac{dA}{d(Ad)} = \frac{\partial A}{\partial (Ad)}.$$

Allowing for the influence of A on E , however, we write:

$$\frac{dE}{d(Ad)} = \frac{\partial E}{\partial (Ad)} + \frac{\partial E}{\partial A} \frac{dA}{d(Ad)}.$$

Hence the optimum advertising policy is

$$\frac{dW}{d(Ad)} = \phi' \left[\frac{\partial A}{\partial (Ad)} - \frac{\partial E}{\partial (Ad)} + \frac{\partial E}{\partial A} \frac{dA}{d(Ad)} \right] = 0.$$

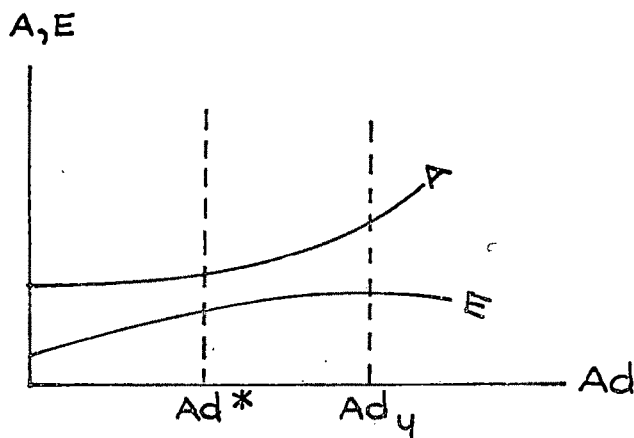


FIGURE 3

further increases in income are replaced by decreases in income net of advertising expenses. There is therefore an *income*-maximizing advertising budget which is indicated by Ad_y . But this is a value of advertising in excess of the welfare optimum. For, an unavoidable effect of devoting resources to advertising is to raise the levels of aspirations in society. Even if we suppose that aspirations do not rise significantly in response to the rudimentary kinds of informational advertising that may constitute a kind of hard core, the expensive promotional forms of advertising are undoubtedly highly effective in raising aspirations. A general form of this relation is shown in the curve labeled A . The upward-sloping segment may begin farther to the left than I have drawn it, but it is doubtful that the nearly horizontal segment extends as far to the right as the maximum point of the E -function. The *welfare*-maximizing advertising budget (labeled Ad^*) is found where the vertical distance $A-E$ is a minimum, and it is therefore always to the left of the *income*-maximizing advertising budget.

If the motives presented to advertisers by the market are likely to encourage a level of such spending beyond the income maximum (Ad_y), then this amount is *a fortiori* greater than the welfare maximum. There are three circumstances which do indeed lead advertisers to go beyond what is economically justified. They can, first, hope to control the market to give themselves a degree of monopoly by building customer loyalty and raising the barriers to entry. Second, some advertising media are prevented from effectively responding to final consumer preferences because media services are sold only to advertisers as intermediate services instead of to consumers as final goods. This limitation on the marketing of radio and television facilities is in part a technical

limitation, but is also in part a consequence of the method of public regulation of radio and television by the Federal Communications Commission [2]. As a result advertisers buy communication resources for a lower price than would prevail if the market also reflected the direct demand of consumers, and they are thus encouraged to expand advertising beyond the social ideal. Finally, the market uncertainty that firms face is probably met, under conditions of oligopolistic industry, by large defensive advertising expenditures in excess of an income optimum. Therefore, I conclude that advertising in our kind of economy is carried beyond the welfare ideal. Furthermore, even if the motives connected with monopoly or the lure of monopoly were removed and the markets in which the media are sold were reorganized to prevent such uneconomic extension of advertising it would be necessary to find further discouragements to advertising spending if the amounts spent were to approach the welfare ideal.

Suppose now instead of applying this analysis to advertising we consider the question of education policy, most especially in underdeveloped countries where education is such an important determinant of levels of aspiration.

The welfare function remains the same as it was in the advertising case, but we write the aspiration and income functions so as to draw attention to the dual role of education: $A = f(L, \dots)$ and $E = g(A, L, \dots)$, where L equals outlays of individuals and governments on education. Then $W = \phi [f(L, \dots) - g(A, L, \dots)]$. The diagram of Figure 3 serves, changing only the name of the abscissa from advertising to education.

Net income due to investment in education is described by the E -function. The E -function turns down because costs rise and marginal benefits fall. Rising costs are the resultant of two opposing forces. On the one hand costs rise because teachers require specialized training which prevents their easy transfer from other activities. In the long run the flow of teachers can be increased; but because the people drawn into education from other activities will be a relatively high proportion of those in other activities who can be trained to teach, expansion of education requires disproportionate sacrifices of other goods and services to free the needed teachers. Possibly of some additional weight, the marginal teachers in any size educational establishment are likely to be less productive than the average and the quality of education tends to fall as the amount of education increases.

On the other hand, there is some downward pressure on costs as education expands giving rise to economies resulting from a greater division of labor and specialization among teachers and teaching institutions. The greatest gains over time to such specialization come from

the intensified development of the various fields of learning. But, because of the opportunity to countries with education establishments of all sizes for a free flow of ideas and even of people, most of these advantages do not require a large scale of education within any one country. Therefore, on balance, education would appear to expand at increasing cost.

Marginal benefits to education expenditures fall because of the shift in factor proportions. Increasing the numbers of people who are educated in any particular skill means a rise in the growth rate of skills relative to the rise in other cooperating factors, and hence diminishing marginal returns to investment in education. Although it is possible for skilled or educated labor to be underweighted initially, so that for a time there may be increasing marginal returns, this cannot be the case indefinitely.

The effect of education on the level of aspiration is shown by the A -function. The A -function rises as education increases. If the aspiration-raising influence of all education is equally great then the A -function is linear. However, if, as per capita expenditures on education rise, the character of education becomes more modern, less closely related to productive activity, and more of a consumer service, the aspiration-raising influence is likely to increase and the A -function will turn upward more steeply, as I have drawn it.

Education policy based on the calculation of net benefit with respect to fixed tastes is excessive when account is taken of the aspiration-increasing effects of education. The optimal education policy (budget) is at Ad^* (read L^*) which is to the left of the maximum of the E -function, Ad_v .

VI. *Changes in Taste and Demand*

The final point to be made in exploring the implications of the aspiration-welfare criterion has to do with the troublesome question of experience and the demand curve. If experience with new goods "creates" the taste for those goods there is (a) the factual expectation that the observable pattern of purchases as the price falls will not be reproduced in reverse if the price rises [4, pp. 133-34], which is to say that the demand curve is inherently irreversible; and (b) there is no meaning to assertions that one or the other of the two situations—before and after the change in tastes—is the better. Schoeffler's [12, p. 885] strong criterion for judging two such situations is to require that for situation II to be considered preferable to I, II must be preferred to I in accordance with the tastes prevailing at the time of situation II and also with the tastes of the time of situation I. This test is rejected by Rothenberg [11, pp. 887-88] on the ground that, in this kind of change,

learning takes place and therefore the tastes of a later time are the relevant ones, for they are based on the wider experience of both periods.¹⁷ There is an arbitrary concealed value here, a preference for learning regardless of what has been learned.

Taste changes are brought about in the process of aspiration-level shifts. The level of aspiration for total income is the sum of aspirations for particular goods and service components of income, and it is the shifts in the level of aspiration for these components which are ultimately responsible for shifts in the level of aspiration for income in general. Therefore taste changes and aspiration-level shifts are to a large extent the same. (Not all taste changes are aspiration-level shifts, although all aspiration-level shifts are taste changes.) But this view of taste change differs from the view that taste acquisition is a learning process in one important respect. Shifts in the level of aspiration are reversible while learning is not.¹⁸ It is therefore possible for the preference for goods to decline just as well as to increase. Whether there is an aspiration-taste change in conjunction with changes in the consumption of goods must be determined in each case independently of the change in consumption. The evaluation of pairs of situations cannot be made either by a Schoeffler-type double criterion or by resort to the taste standard of the last situation. Each situation is evaluated by its own standard of tastes. And welfare gains can be said to occur when an increase (decrease) in income is greater (less) than the rise (decline) in the standard of taste. Or, to put the same thing more simply, welfare increases whenever the aspiration-income gap is reduced.

REFERENCES

1. E. G. BORING, H. S. LANGFELD, H. P. WELD, *Foundations of Psychology*. New York 1948.
2. R. H. COASE, "The Federal Communications Commission," *Jour. Law and Econ.*, Oct. 1959, 2, 1-40.
3. M. FRIEDMAN, *A Theory of the Consumption Function*. Princeton 1957.
4. N. GEORGESCU-ROEGEN, "The Theory of Choice and the Constancy of Economic Laws," *Quart. Jour. Econ.*, Feb. 1950, 64, 125-39.

¹⁷ Rothenberg nevertheless takes an unjustifiably optimistic view of the problem of irreversibility of demand which he bases on the belief in the formation of basic personality in childhood when fundamental tastes are supposed to be formed.

¹⁸ So at least Rothenberg asserts [11, p. 887], and so it is often stated by other economists. In so far as learning is no more than experiencing, this is probably an acceptable view. A more sophisticated view—and one more suited to use in the theory of consumer choice—would conform more closely to the patterns described by learning psychologists [5, pp. 31, 76-96]. These patterns require more than mere experience for learning to occur; they require some kind of "reinforcement" by reward or punishment, and there is a reverse of the process as well. Extinction of learning occurs with negative reinforcement. Learned tastes can be unlearned just as aspiration-levels rise and fall. Hence the conclusion reached for aspiration-shift taste changes apply also to more generally learned tastes.

5. E. R. HILGARD, *Theories of Learning*. New York 1956.
6. J. M. KEYNES, *The General Theory of Employment Interest and Money*. New York 1936.
7. K. LEWIN, T. DEMBO, L. FESTINGER, AND P. S. SEARS, "Level of Aspiration," in J. McV. Hunt, *Personality and the Behavior Disorders*, New York 1944, pp. 333-78.
8. A. MARSHALL, *Principles of Economics*, 8th ed. London 1930.
9. D. C. MCCLELLAND, *Personality*. New York 1951.
10. J. K. MEHTA, *Advanced Theoretical Economics*. Delhi 1948.
11. J. ROTHENBERG, "Welfare Comparisons and Changes in Taste," *Am. Econ. Rev.*, Dec. 1953, 43, 885-90.
12. S. SCHOEFFLER, "Note on Modern Welfare Economics," *Am. Econ. Rev.*, Dec. 1952, 42, 880-87.
13. R. S. WECKSTEIN, *The Influence of the Rate of Interest on Personal Saving*, Unpublished Ph.D. dissertation, Yale University 1953.
14. C. WOLF, JR., *Foreign Aid: Theory and Practice in Southern Asia*. Princeton 1960.

A QUARTERLY ECONOMETRIC MODEL FOR THE UNITED KINGDOM

A Review Article

By MARC NERLOVE*

Construction and estimation of a large econometric model is an arduous task which requires a great deal of patience as well as skill. When a new one appears, it behooves us to examine it closely. This article is such an examination of the recently published quarterly econometric model of the economy of the United Kingdom, done by L. R. Klein and three co-workers.¹ This model represents a significant advance in at least two respects:

First, it is the only major econometric model for the current economic structure of the United Kingdom. An earlier investigation by Tinbergen of this structure covered the period 1870-1914, and is thus essentially a statistical essay in economic history [15]. A very small-scale and rudimentary model was done by Radice before the Second World War [14]. In addition to being highly simplified, it, too, has only little relevance to the current situation. In view of the substantial economic difficulties Britain has faced during the post-war era and is likely to continue to face, a detailed econometric model of the sort presented by KBHV is a most welcome addition to the stock of knowledge about the British economy.

The second respect in which the KBHV model represents a significant advance is that it is a quarterly model. Indeed, it is the first substantively serious attempt to develop a quarterly econometric model for any economy.² Earlier attempts by Barger and Klein [1], by Clark [3] and by Gallaway and Smith [6] contain six, seven and four equations respectively. The Barger-Klein model is frankly experimental; the Clark model contains no monetary variables and is highly aggregative so that its significance for policy decisions and forecasting is limited. The Gallaway-Smith model is also excessively aggregative.

*The author is professor of economics at Stanford University. Assistance in the preparation of this article was received under Grant No. G-16114 to Stanford University from the National Science Foundation. Helpful suggestions were made by K. J. Arrow.

¹L. R. Klein, R. J. Ball, A. Hazlewood, and P. Vandome, *An Econometric Model of the United Kingdom*. Oxford: Basil Blackwell, 1961. Pp. xii, 312. 60s. Hereinafter referred to as KBHV.

It is assumed that the reader is familiar with the material contained in Carl Christ's earlier review of the Klein-Goldberger annual model of the U. S. economy [2].

²T. C. Liu is currently developing a detailed quarterly model of the U. S. economy, and it is my understanding that the studies initiated by the Social Science Research Council Committee on Economic Fluctuations will also include the development of such a model. The present article owes much to discussions with Liu concerning his model.

Quarterly econometric models are important to the future of quantitative economics for at least three reasons:

1. In order to estimate and apply an aggregative econometric model, a period must be found over which it can plausibly be assumed that no structural changes have occurred or that those which have occurred are of an exceedingly simple variety.³ Thus, for example, it is difficult to justify fitting a model to data on the interwar and postwar periods combined. Yet if the model is of any degree of complexity, estimation requires substantial numbers of observations; use of annual data thus presupposes rather long periods over which it is implausible to assume that changes in structure have been minor or of a particularly simple sort. A partial solution to this difficulty is the use of quarterly series. Over a ten-year period, for example, 40 quarterly observations are available, so that in the postwar period alone there are more quarterly observations than there are annual observations since 1920, omitting the war years. Nevertheless, it is not correct to say that over a given number of years there is four times as much information in a series of quarterly as in a series of annual observations; to do so would neglect several of the problems discussed in Section II below, most especially the problem of seasonality.

2. Quarterly models are analytically more useful than annual models. In large part, for example, the current debate over the causes of the inflationary tendencies in the U. S. and British economies revolves around the nature of the lags involved. The current pattern of recessions and recoveries in the U. S. economy cannot be well understood in terms of year-to-year changes; its study requires a much finer disaggregation over time. Quarterly models, of course, provide just such a disaggregation over time and are potentially capable of yielding far more accurate information about the structure of lags in the economy than are annual models. Such information is important not only for increased understanding of the way in which the economy functions but for estimation itself.⁴ In addition, the problem of untangling long-run and short-run adjustments, of which observed movements are a complex mixture, is greatly facilitated by disaggregation over time.⁵

³ Such as those which can be represented by a simple shift in the level of one or more of the equations. Several examples of these occur in the KBHV model.

⁴ Some years ago there was a heated debate concerning the relative importance of recursiveness and interdependency in economic behavior. In essence, this is a question of whether most economic variables are simultaneously determined (interdependent) or whether many are primarily determined by the events of a previous period. Since disaggregation over time makes it more likely that a particular endogenous variable depends only on lagged values of other endogenous variables or exogenous variables, such disaggregation makes a recursive structure more plausible. But this gain may be more than offset by increased serial correlation. See Section II below. In the case of a recursive structure, traditional methods of estimation such as least squares are generally appropriate, whereas when the variables are simultaneously determined, more complicated procedures such as limited information methods or two-stage least-squares must be employed.

⁵ The method of distributed lags proposed by Irving Fisher in the 1920's, and recently revived, is potentially very useful in this connection, but it has been shown that use of this method on annual data can lead to seriously distorted results; see [10] [11]. While the use of the quarterly data does not preclude such difficulties, it obviously lessens their severity.

3. Finally, the needs of public and business policy for very short-term forecasts are apparent. If anticyclical policies are to have stabilizing rather than destabilizing effects, up-to-date information on the current state of the economy and of the probable quantitative impact of alternative monetary and fiscal policies is required. A quarterly econometric model, however good it may be, is obviously not sufficient, but it is an important step in the right direction.

I. Structure of the KBHV Model

The KBHV quarterly model consists of 37 equations, of which six are strict identities which hold exactly in every quarter, and one is a quasi-identity based on a stochastic relationship used in the interpolation of one of the endogenous variables. There are thus 30 equations which reflect economic behavior, technological or institutional restraints, or market adjustment processes. The 37 equations determine the values of 37 current endogenous variables as functions of their lagged values and the values of three stock variables and 33 exogenous variables, both current and lagged. The equations and variables which each contains are listed in Table 1 (pp. 158-61).

Design of an econometric model depends on a series of compromises among: (a) the structure of the economy to be described; (b) the multiple, and often partially conflicting, objectives of the model—i.e., is it to be used primarily for forecasting? If so, of what? Is it to be used primarily for policy decisions? If so, of what sort? Or is it to be used to analyze some specific phenomenon such as the wage-price spiral? And (c), the availability of data. The structure of KBHV model reflects all of these factors; it is an unfortunate fact of life that the last of the three tends to dominate.

The first four equations concern the index of industrial production and three of its major components. That four of the key variables in the model relate to industrial production, rather than to GNP and its components, is largely a result of the decision to construct a quarterly model. Only limited amounts of national accounting data were available to the authors at the time they began their study; while they could have interpolated the quarterly series corresponding to the annual national accounts by means of various related series such as industrial production, they preferred to construct their model directly in terms of the major series which might have been used as interpolators. Nevertheless, a good deal of interpolation was necessary, and the problems it raises are discussed below.

Equation (1) explaining aggregate production is the only one of the four which involves more than a single current endogenous variable; it contains a measure of man-hours and total imports, and a simple time trend represents both the growth of the capital stock and technical progress. Use of the trend in this way reflects the lack of quarterly data on the capital stock; even if adequate data had existed, however, the series on capital stock would hardly be distinguishable from trend over such a short period.

The other three production equations relate components of an aggregate production index only to lagged endogenous and exogenous variables. Since engineering, etc., includes a high proportion of capital goods, variables related

to investment decisions, such as the interest rate, are included. Thus (3) takes the place of an investment function and investment never appears explicitly in the model. The interest rate has a small, negative and statistically insignificant effect in this equation. The four production equations, together with the identity (32), determine aggregate industrial production and its three components as functions of three endogenous variables (hours, industrial employment and income) and fourteen predetermined variables. The important point about these four equations is that the link between the production sector, which they represent, and the monetary sector, represented by the interest rate lagged four quarters in (3), is a weak one. Acceleration effects represented by the lagged consumption variables appearing in the equations are substantially more significant, as are the fiscal effects represented by the lagged values of government purchases.

The next four equations are consumption functions for the goods represented in the three component production indices plus a function for the consumption of services. In two of the equations an attempt is made to estimate separate marginal propensities to consume out of wage and salary income and out of property income. A crude form of distributed lag is employed by the inclusion of the value of average consumption in the appropriate category over the past eight quarters. The relative prices of consumption components enter neither the production nor the consumption equations; absolute prices enter only as the deflators of the income variables, and are determined elsewhere in the model by four price-determination equations, (24)-(27), one of which contains a current wage variable. Thus prices are not determined in the commodity markets and they reflect consumption and production decisions only indirectly via the labor and money markets. Had statistics on stocks been available, a closer connection between the real and the monetary sectors might have been established.

In comparison with the U. S. economy, that of the United Kingdom is heavily dependent upon international trade, although less heavily so than some others, such as the Dutch. Both because of this characteristic and because of the authors' interest in the British balance-of-payments position, the international sector is well represented; there are three import equations and no less than six stochastic equations and one identity relating to exports. The three import equations refer to different commodity groups; four of the export equations explain exports to different areas; two of the export equations refer to exports of separate commodity groups, food and engineering (machinery) products; there is no attempt to cross-classify exports by both area of destination and commodity group. All of the equations in this sector contain only one current endogenous variable and may therefore be estimated by least squares. All equations contain lagged variables related to the level of economic activity. Several contain lagged variables reflecting the relevant reserve positions, gold and dollar reserves in the case of U. K. imports, and sterling reserves in the case of exports to the two sterling areas distinguished.

In general, prices play only a small role in these equations; relative prices were significant in the determination of U. K. exports to the dollar area and of food; export prices affect exports to the sterling areas only indirectly through

TABLE 1—STRUCTURE OF THE KLEIN-BALL-HAZELWOOD-VANDOME QUARTERLY ECONOMIC MODEL OF THE UNITED KINGDOM*

Type of Equation $\frac{a}{b}$	Current Endogenous Variables Included $\frac{b}{c}$	Lagged Endogenous Variables Included $\frac{c}{d}$	Current and Lagged Exogenous Variables Included
<u>Production Equations</u>			
(1) Industrial Production Function	P, h, E_p, I	None	t, Q_1, Q_2, Q_3
(2) Production Decision Equation for Food Production	P_f	$(C_f)_{t-1}, (\alpha_f)_{t-1}$	Q_1, Q_2, Q_3
(3) Production Decision Equation for Metals, Engineering and Vehicles, and Building Production	P_{eb}	$(\alpha_e)_{t-1}, (D/p_k)_{t-1}, (1/T_d)_{t-1}, (v)_{t-4}, (C_d)_{t-1}$	$Q_1, Q_2, Q_3, (G_k)_{t-1}$
(4) Production Decision Equation for Non-Food, Non-Engineering and Non-Building Production	P_o	$(C_o)_{t-1}, (\alpha_o)_{t-1}$	$Q_1, Q_2, Q_3, (G_s)_{t-1}$
<u>Consumption Equations</u>			
(5) Consumption Function for Food, Drink and Tobacco	$C_f, W/p_f \cdot 1/T_w, D/p_f \cdot 1/T_d$	$(C_f)_{t-1}$	Q_1, Q_2, Q_3
(6) Consumption Function for Durables	$C_d, W/p_d \cdot 1/T_w, D/p_d \cdot 1/T_d$	$(C_d)_{t-1}$	Q_1, Q_2, Q_3
(7) Consumption Function for Non-Food, Non-Durable Goods	$C_o, W/p_o \cdot 1/T_w, D/p_o \cdot 1/T_d$	$(C_o)_{t-1}$	Q_1, Q_2, Q_3
(8) Consumption Function for Services	$C_s, W/p_s \cdot 1/T_w$	$(C_s)_{t-1}$	Q_1, Q_2, Q_3
<u>Import Equations</u>			
(9) Import Function for Food	I_f	$(C_f)_{t-1}$	$Q_1, Q_2, Q_3, (R)_{t-2}$
(10) Import Function for Raw Materials	I_m	$(P)_{t-1}, (S^m)_{t-1}$	$Q_1, Q_2, Q_3, (R)_{t-2}$
(11) Import Function for Non-Food Manufactures	I_o	$(P)_{t-2}, (p)_{t-2}, (p_o/p_o)_{t-2}^{**}$	$Q_1, Q_2, Q_3, (R)_{t-2}, \Delta(p_{met})_{t-3}$
<u>Export Equations</u>			
(12) Equation for Exports to the Dollar Area	X_s	$(p_s/p_x)_{t-1}$	$Q_1, Q_2, Q_3, (P_s)_{t-1}$
(13) Equation for Exports to the OEEC Area	X_{er}	$(p_{er}/p_x)_{t-1}^{**}$	$Q_1, Q_2, Q_3, (P_{er})_{t-1}, A^{**}$
(14) Equation for Exports to the Independent Sterling Area	X_{ei}	$(p_{ei}/p_x)_{t-2}^{**}, (p_s/p_x)_{t-2}^{**}, (B_i/p_x)_{t-2}$	$Q_1, Q_2, Q_3, (P_i)_{t-2}, J$
(15) Equation for Exports to the Dependent Sterling Area	X_{di}	$(B_d/p_x)_{t-3}$	$Q_1, Q_2, Q_3, (P_d)_{t-3}, J$
(16) Equation for Food Exports	X_f	$(p_{wf}/p_x)_{t-3}$	$Q_1, Q_2, Q_3, (P_{wf})_{t-3}$
(17) Equation for Engineering Exports	X_e	$(p_{xe}/p_{xe})_{t-1}^{**}$	$Q_1, Q_2, Q_3, (P_{we})_{t-1}$

TABLE 1—Continued

Labor Equations			
(18) Wage Rate Determination Equation	$w_t - (w_t)_{t-4}, \bar{U}, p - (p)_{t-4}$	None	Q_1, Q_2, Q_3, F
(19) Equation for the Spread between Wage Rates and Earnings	$w_e - w_t, h, p/h, E_p$	None	Q_1, Q_2, Q_3
(20) Equation for Hours Worked	$h, \bar{U}^{**}/p$	None	Q_1, Q_2, Q_3
(21) Labor Supply Function	E_f, \bar{U}	None	t, Q_1, Q_2, Q_3
(22) Supply Function for Private Non-Industrial Employment	$E - E_p - E_g, E_p, \bar{U}$	None	Q_1, Q_2, Q_3
Monetary and Price Level Equations			
(23) Liquidity Preference Function	$r, M/a_0, W + b_0 D, p - (p)_{t-4}$	None	Q_1, Q_2, Q_3, r_b
(24) Equation for the Mark-Up of Prices over Costs	p, w_e	None	$Q_1, Q_2, Q_3, T_f, (p)_{t-2}$
(25) Food Price Determination Equation	$p_t, p^{**}/$	None	$Q_1, Q_2, Q_3, (p)_{t-2}, S_u, Z$
(26) Consumer Durable Price Determination Equation	p_d, p	$(S_d)_{t-1}^{**}/$	$Q_1, Q_2, Q_3, (p_{met})_{t-2}$
(27) Equation for the Determination of the Price of Non-Food, Non-Durable Consumer Goods	p_o, p	None	$Q_1, Q_2, Q_3, (p_m)_{t-2}$
(28) Producer Goods Price Determination Equation	p_k, w_e	$(S_d)_{t-1}^{**}/$	$Q_1, Q_2, Q_3, (p_{met})_{t-2}$
(29) Export Price Determination Equation	p_x, p	None	$Q_1, Q_2, Q_3, (p_{xc})_{t-2}$
(30) Food Export Price Determination Equation	$p_{xf}, p^{**}/, p_x$	None	Q_1, Q_2, Q_3
(31) Interpolation Equation for Sum of Employment Income and Company Profits	D	$(pP)_{t-1}, (W)_{t-1}$	Q_1, Q_2, Q_3
Identities $\frac{d}{dt}$			
Type of Equation			
(32) Industrial Production	$P = w_{pf} P_f + w_{pe} P_{eb} + w_{po} P_o$		
(33) Total Imports	$I = w_{if} I_f + w_{im} I_m + w_{io} I_o$		
(34) General Price Index of Consumer Goods	$p = w_{cf} P_f + w_{cd} P_d + w_{co} P_o + w_{cs} P_s$		
(35) Total Exports	$w_{xf} X_f + w_{xe} X_e + w_{xo} X_o = w_{xx} X_x + w_{xc} X_c + w_{xer} X_{er} + w_{xrw} X_{rw}^{**}/f/$		
(36) Total Wage Bill	$w_e E = w_{w0} + w_{w1} W$		
(37) Labor Force	$E_f = w_u U + w_f E$		

(Notes to Table 1 appear on page 161)

VARIABLE DESIGNATIONS

A. Current Endogenous VariablesIndustrial Production Series:

P = Total industrial production

 P_f = Production of food, drink, and tobacco P_{eb} = Production of metals, engineering and vehicles, and building P_o = Other industrial productionConsumption Series (at constant prices):^g C_f = Consumption of food, drink, and tobacco C_s = Consumption of services^k C_d = Consumption of durable goods^k C_o = Consumption of other goodsPrice Series:^h p = Price index of total consumption p_f = Price index of food, drink, and tobacco p_s = Price index of services p_d = Price index of consumer durables p_o = Price index of other consumer goods p_k = Price index of fixed assets^k p_x = Price index of total exports p_{xf} = Price index of food, drink and tobacco exports r = Index of debenture yieldsEmployment Series:^h E_l = Total civilian labor force E = Total civil employment E_p = Total industrial employment U = Total unemployment h = Hours worked per week^kWages and Profit Series: w_r = Index of weekly wage rates w_o = Index of weekly wage earnings^k W = Wage and salary income in current prices^k D = Index of gross company profits^kImport Volume Series: I = Total imports I_f = Imports of food, drink and tobacco I_m = Imports of basic materials I_o = Imports of manufacturesExport Volume Series: X_f = Exports of food, drink, and tobacco X_e = Exports of metals and engineering X_o = Other exports X_s = Exports to dollar area, deflatedⁱ X_{er} = Exports to OEEC countries, deflatedⁱ X_{Li} = Exports to independent sterling area, deflatedⁱ X_{Ld} = Exports to dependent sterling area, deflatedⁱB. Stocks^j R = End-of-quarter gold and dollar reserves as a proportion of UK imports S_m = Ratio of stocks of imported materials to value of materials imports in preceding 8 quarters S_d = Ratio of stocks of durable materials at end-of-quarter to production and imports of such in preceding 8 quartersC. Exogenous VariablesDomestic Monetary and Fiscal Series: E_g = Total civilian government employment T_w = Tax rate on income from employment^k T_d = Tax rate on non-employment income^k T_d' = Tax rate on company profits^k T_i = Rate of net indirect taxation^k S_u = Subsidies on food and agriculture^k G_k = Real capital formation by public authorities^k G_s = Real expenditure on current goods and services by public authorities^k M = Average quarterly holdings of liquid assets r_b = The bank rateForeign Price Series: p_1 = Index of all import prices p_{if} = Index of imported food, drink and tobacco prices p_{im} = Index of imported basic materials prices p_{io} = Index of imported manufactures prices p_{met} = Index of imported non-ferrous metals prices^k p_s = Index of domestic prices of manufactured goods in the dollar area p_{wf} = Index of world domestic food prices p_{xo} = Index of export prices of competing countriesForeign Production Series: P_s = Industrial production in the dollar area

(Continued on page 161)

P_{or} = Industrial production in OEEC countries	Shift Variables:
$P_{\xi t}$ = Index of production in the independent sterling area	F = Political factor in wage bargaining = 0 before January 1952 = 1 thereafter
$P_{\xi d}$ = Value of exports of the dependent sterling area deflated by the price index for UK exports	J = Factor for change in status of Northern Rhodesia and Nyasaland = 0 before January 1954 = 1 thereafter
P_{wt} = World production weighted according to share in UK food exports	Z = Food derationing factor = 1 in 1954 and 1955 = 0 all other periods
P_{we} = World production weighted according to share in UK engineering exports	t = Time in units of quarters
Foreign Monetary Series:	Q_1 = 1 in the first quarter = 0 otherwise
$B_{\xi t}$ = End-of-quarter sterling balances in the independent sterling area ^k	Q_2 = 1 in the second quarter = 0 otherwise
$B_{\xi d}$ = End-of-quarter sterling balances in the dependent sterling area ^k	Q_3 = 1 in the third quarter = 0 otherwise

NOTES TO TABLE 1

* Source: KBHV, pp. 51-93.

** Variable dropped in final formulation which was estimated.

^a Equation numbers do not correspond in every case to those used by KBHV due to the grouping employed in this table.

^b Variables have been classified in the form in which they enter the equation. Any variable combination which includes at least one current endogenous variable has been classified as such even though the combination includes one or more lagged endogenous or exogenous variables. This procedure is recommended in H. Chernoff and H. Rubin, "Asymptotic Properties of Limited-Information Estimates under Generalized Conditions," pp. 200-212 in W. C. Hood and T. C. Koopmans, eds., *Studies in Econometric Method* (New York: John Wiley and Sons, 1953).

^c For the reason given in the preceding footnote, variable combinations including lagged but not current endogenous variables and one or more exogenous variables have been classified as lagged endogenous.

^d This is based on an annual empirical relation between the sum of employment income and company profits and the money value of industrial production which was used to interpolate quarterly figures which in turn were used to adjust raw estimates of employment income and of company profits after a seasonal adjustment.

^e In these equations the w 's are weights used to combine component indices into total indices.

^f Exports to countries outside the OEEC area and outside the sterling areas are assumed to be essentially nil and thereby eliminated from consideration in the model.

^g \bar{C} , $^* = f, s, d$, or o , is defined as the arithmetic average of the current and preceding seven quarters.

^h \bar{p} or \bar{U} = arithmetic average of the current and preceding three quarters of p or U , respectively.

ⁱ Deflated by index of the prices of all exports.

^j These are actually endogenous but enter the model in lagged form only.

^k Major interpolation required to obtain this series.

their effects on deflated sterling balances. The latter, however, were found to be quite significant in the determination of exports to these areas. It is unfortunate that the authors were unable to design this sector of the model in such a way that significant conclusions could be drawn regarding the British balance-of-payments position and the controversy concerning the effects of relative prices in international trade. The authors frankly admit that this was not possible because of the restriction of this sector to movements of commodities and neglect of capital movements. Some monetary effects on the international flow of commodities are taken into account through the introduction of lagged reserves. Despite the paucity of information concerning relative price effects yielded by the model, however, the authors devote considerable attention to this matter.⁶ This discussion in the main consists of an extended critique of Orcutt's strictures against the use of regression analysis [13] and an attempt to explain why, despite apparently great efforts, they were unable to uncover significant price effects in all but two of the equations. I suspect that their failure in this direction may have been due to use of arbitrary discrete lags rather than more flexible distributed lags.

A large part of KBHV is devoted to the monetary and labor sectors of the model from which conclusions may be drawn concerning the causes of persistent inflationary pressures in the British economy and possible policy measures for their mitigation.⁷ These sectors are discussed in more detail below; at this point I note only their main characteristics: As already indicated, direct connection between the real and monetary sectors is extremely weak, resting only on a statistically insignificant relation between the interest rate lagged four quarters and the production of metals, machinery vehicles, and buildings. The indirect connection between the real and monetary sectors via the labor market is somewhat stronger, however; it operates primarily through the effects of production upon wages and earnings and the effects of the latter on the general price level; the reverse effects are via the effects of the price level upon wages and the consequent impact upon production. Except for a relatively minor tie between wage and property incomes, which enter the liquidity preference function and depend on employment via identities (31) and (36), and consumption in various categories, the connection is achieved solely through the level of industrial production. This fact makes it especially difficult to focus on whatever purely monetary forces may have operated during the postwar period to produce the inflationary pressures. As a further criticism, since the price levels of component categories are mainly related to the general price level they play virtually no independent role; in many respects, equations (25)-(30) appear to have been chosen solely to close the model.

II. *Special Problems of a Quarterly Model*

In the formulation and estimation of quarterly econometric models, four groups of problems must be squarely faced. These problems are all present

⁶ KBHV, pp. 126-40.

⁷ In addition to pp. 73-86, which deal with the formulation of equations (18)-(30), KBHV devote half of Chapter 4, pp. 111-26, and an Appendix, pp. 260-75, to a discussion of the inflationary mechanism implied by their results. The first half of Chapter 4 was published separately [9].

in the case of annual models but to a significantly lesser degree, and they are often neglected in that context. The problems of special significance in quarterly models are connected with: (1) the interpolation required to obtain many of the series used; (2) the effects of seasonality; (3) the greater degree of serial correlation present in quarterly as compared with annual series; and finally (4) the determination of the appropriate structure of lags to be used. These various problems are, of course, not unrelated.

1. *Interpolation.*⁸ One of the chief difficulties in constructing a quarterly model is the relatively greater problem in obtaining relevant data on a quarterly rather than an annual basis. Given quarterly data, one can always, of course, aggregate them to obtain annual series; the reverse requires interpolation which is considerably more difficult than aggregation. The decision of KBHV to eschew the national accounting framework, because of the difficulty of putting the accounts on a quarterly basis did not entirely free them from problems of interpolation: Of the 73 variables involved in the model, 7 were purely shift variables. Extensive details on the construction of the remaining 66 series are given; 17 of the series required for the model were available only on an annual or semi-annual basis for most of the period.⁹ Thus, more than 25 per cent of the series used were interpolated by KBHV. And, of course, many of the monthly or quarterly series used by KBHV may have been the result of considerable interpolation in the process of official compilation.

In its simplest form, the problem of interpolation may be described as follows: We have a series x_t whose values are known at $t = 0, \Delta t, 2\Delta t, \dots$ and we wish to "fill out" the series at the points $t = 1/2\Delta t, 3/2\Delta t, 5/2\Delta t, \dots$ ¹⁰ There are two basic methods for doing this:

Method I: *Using only the series itself.* Essentially, this is mathematical interpolation. In its simplest form, we interpolate $x_{t+1/2\Delta t}$ along the straight line joining x_t and $x_{t+\Delta t}$,

$$\text{est. } x_{t+1/2\Delta t} = 1/2(x_t + x_{t+\Delta t}),$$

but more complicated methods are possible, which use more than two of the observations to interpolate between each pair.¹¹

⁸ My discussion in this section owes much to an unpublished paper by Milton Friedman, "Notes on the Interpolation of Time Series by Related Series." Regrettably, little attention has been devoted to this subject by economists despite the fact that most economic time series are veritable patch-work quilts.

⁹ KBHV, pp. 141-88. I counted as major interpolation, interpolation of more than eight quarters. Minor interpolation, eight or fewer quarters, was required in three additional cases. It is often jokingly maintained that econometricians spend far more time "manufacturing" their series than they do their models. Joke this may be, but it is not far from the truth. KBHV are to be commended for the systematic airing they have given this particular family skeleton, knowing, as they must have, that to do so would open them to much more effective criticism.

¹⁰ A closely related problem is that of distributing a known total over an interval of time; thus, for example, we know $x_t + x_{t+1/2\Delta t}$ and we wish to find x_t and $x_{t+1/2\Delta t}$ separately. Clearly, we could redefine

$$x'_t = x_t + x_{t+1/2\Delta t}, \quad x'_{t+1/2\Delta t} = x_{t+1/2\Delta t},$$

so that this problem is identical to the simple interpolation problem in x'_t .

¹¹ Logically, one should use all the available observations to interpolate between any

Method II: *Using one or more related series.*¹² Instead of mathematical interpolation, a series related to the one for which interpolation is required, but which is available at shorter time intervals, is frequently used to perform the interpolation. Although there are many ways in which related series have been used for interpolation, all the methods fall into two categories: correlation methods and noncorrelation methods. Let y_t be the related series. A simple example of a noncorrelation method is as follows: Interpolate linearly between the known values of x_t and $x_{t+\Delta t}$ and of y_t and $y_{t+\Delta t}$; use the difference between $y_{t+1/2\Delta}$ and its interpolated value to adjust the interpolated value of x ; thus,

$$\text{est. } x_{t+1/2\Delta t} = \frac{1}{2}(x_t + x_{t+\Delta t}) + [y_{t+1/2\Delta t} - \frac{1}{2}(y_t + y_{t+\Delta t})].$$

A simple example of a correlation method is as follows: Compute the least-squares regression of x_t on y_t for the time points at which both are available; let this regression be $x_t = a + by_t$; then estimate $x_{t+1/2\Delta t}$ from $y_{t+1/2\Delta t}$ according to the regression; thus

$$\text{est } x_{t+1/2\Delta t} = a + by_{t+1/2\Delta t}.$$

Correlation methods probably make more sense than noncorrelation methods in many circumstances.

It is unfortunately not possible to tell from the description given in KBHV precisely what methods of interpolation were employed for each of the 17 series which required it. It appears, however, that about half the series were interpolated using a related series, which itself occasionally required some form of partial interpolation. In other cases noncorrelation methods were used. No seasonal adjustments appear to have been made in the series before interpolation, or allowed for in the interpolation process. This means, in the case of Method I, that seasonality is assumed to be absent and, in the case of Method II, that it is either absent or assumed to be identical in both series. Although it can be shown that, if the correlation between two series is low, use of one to interpolate the other may give significantly poorer results than straightforward mathematical interpolation, KBHV did not justify their use of one method or the other and appear to have used a related series for interpolation whenever it was possible to do so.

The fact that such a substantial number of series required interpolation leads to significant difficulties in the interpretation of the results. First, the interpolation process itself uses up information so that the final results are based on less information than might be supposed by considering the number of observations upon which the estimates are based. Second, interpolation may suppress real seasonality or introduce spurious seasonality. Third, interpola-

pair. It can be shown under fairly general conditions that better and better interpolation between any given pair can be achieved as the number of available observations increases.

¹² I know of no instances when more than one related series has been used, but such methods are certainly possible and could conceivably lead to improved results in much the same way that multiple regression may lead to improvement over simple regression. Again, one should use all of both available series to interpolate between any pair of observations on one of the series.

tion, especially by Method I, may introduce serially correlated errors of measurement in the variables which may contribute to serial correlation in the residuals of the equations to be estimated. Finally, the introduction of such serial correlation may make it much more difficult to determine the appropriate lag structure. Ideally, one should never use any method of interpolation per se, but construct a model using as many series available for the appropriate time intervals as possible, and then use a method of estimation which takes account of the fact that some series are observed only at more widely spaced intervals. Only in this way will it be possible to assess correctly the significance of the results and avoid the difficulties mentioned above. Nonetheless, this ideal is difficult even to approach in practice and KBHV should not be criticized too harshly for having failed to do so perfectly.

2. *Seasonality.* In contrast to annual data, data for shorter time intervals generally contain systematic components not explicable on economic grounds alone. Such variations, called seasonals, are typically removed by more or less complicated methods before the data are used in economic analysis. The following features of methods of seasonal adjustment are relevant to the question of whether seasonally adjusted series should be used in an econometric model:

(1) These methods are generally non-parametric so that it is difficult to determine how much of the information present in the original series remains in the seasonally adjusted series.

(2) Existing techniques may remove more than the seasonal, may not remove all of the seasonal, and may even introduce false cycles in the series of period greater than a year. Existing tests do not enable us to determine what has occurred.¹³

(3) Seasonals have causes, even though such causes may not be entirely economic in nature. Thus, part of seasonal variation, at least, ought to be something explained by the model. Present procedures for seasonal adjustment, however, operate solely on a single series so that they can take no account of the causes of seasonal variation.

In so far as it was possible to do so, seasonally unadjusted series were used in the estimation of the KBHV model.¹⁴ This is in sharp contrast to the two other quarterly econometric models which have been published, the Clark and Barger-Klein models, which use seasonally adjusted data for the most part. Barger and Klein go so far as to say, "It may be urged that the economic subject makes his own (rough) seasonal corrections as he goes along. . . . [Thus] seasonally adjusted rather than unadjusted data appear to be the more accurate measure of the variables that interest us" [1, pp. 420-21]. Thus Klein at least has turned about-face in his attitude toward the use of seasonally adjusted data. Given the state of the art, and especially the fact that most methods of seasonal adjustment are not merely retrospective, I think Klein's present position is the more nearly correct of the two.

Some of the seasonal variation in the endogeneous variables appearing in the KBHV model is explained by the seasonal variation in exogenous variables

¹³ It may be possible to use spectral analysis for this purpose.

¹⁴ The index of profits, D , is an exception.

or by the dynamic structure of the model itself, but not all of it is so explained. What remains is handled by means of three shift variables, Q_1 , Q_2 , and Q_3 . Q_i , $i = 1, 2, 3$, is 1 in the i th quarter and 0 otherwise; in the fourth quarter, $Q_1 = Q_2 = Q_3 = 0$ so that no Q_4 is necessary. It will be noted in Table 1 that except for the strict identities, the Q 's appear in every equation. As the authors remark, this sort of seasonal correction "... implies that the relation ... makes parallel shifts in position from quarter to quarter."¹⁵ While this form of seasonal adjustment is overly simplified, it is easy to estimate and the authors argue its plausibility persuasively. However, the procedure is not without drawbacks since the actual effects of seasonality may be more complicated so that the slopes, as well as the intercepts, of the relations are changed [8]. If this is so, it is comparable to the introduction of errors in the variables, which in turn may lead to estimates with poor qualities and residuals that are serially correlated.

Finally, the seasonal patterns obtained in the equations of the KBHV model are valid only within the context of that model; they cannot be used for general purposes or for analyses not conducted within the framework of the KBHV model. Had a different model been formulated, the estimated effects of the quarterly shift variables might have been quite different.

3. *Serial correlation.* If it is true in economic life that *natura non facit saltum*, then the shorter the time intervals at which economic variables are observed, the more highly correlated will each variable be with its own past values. Since the residuals in the stochastic equations represent the net effects of many small influences which have been omitted, these too will tend to be more highly serially correlated the shorter the interval of observation. Thus serial correlation in the residuals, bothersome enough in annual models and the bane of an econometrician's existence, is really troublesome in quarterly models. Furthermore, until recently very little work had been done on either the effects of serial correlation on the standard estimates of the parameters in simultaneous equations models or what to do about such effects.¹⁶

Despite the serious nature of the problem, KBHV treat it in a rather cavalier fashion. They do not, quite correctly in my opinion, adopt the expedient of taking first differences of all the variables in the model. Such a procedure can, as is well-known, increase the amount of serial dependence. What they do is to fit the model on the assumption that the disturbances are serially independent, then test for autocorrelation in estimated disturbances, using the von Neumann ratio for this purpose.¹⁷ Now this test applies to a given series and not one which has been estimated as a residual. The appropriate test to use in the case of residuals from a least-squares regression is the Durbin-Watson test;¹⁸ Durbin has given a modified form which may be

¹⁵ KBHV, p. 43.

¹⁶ For a recent contribution, however, see A. Zellner [17].

¹⁷ The von Neumann ratio is defined as the ratio of the mean-square successive difference of a series to its variance [7]. A value of this ratio close to 2 will be obtained if the series is serially uncorrelated; a value considerably less than 2 if there is positive serial correlation; and greater than 2 if there is negative serial correlation.

¹⁸ The probabilities for this statistic have been tabulated in [5].

used in testing for serial correlation in systems of simultaneous equations [4]. None of these tests, it should be noted, test for more than first-order serial correlation, i.e., correlation between the current value of a variable and its value lagged one period. Since the kind of serial correlation present, especially that introduced by the interpolation process, may not be of this type, it is dangerous to conclude that a test passed means we are in the clear. But, as a matter of fact, the majority of equations fail to pass the test which KBHV employ.

Although the result would be somewhat modified by the use of a correct test, the serious nature of the problem may be indicated by the test KBHV employed: Values of the von Neumann ratio of 1.4 or less indicate the presence of significant serial correlation in a series of 36 observations at a 95 per cent confidence level. Ratios of 1.4 or less were obtained for the residuals in no less than 20 of the 31 stochastic equations of the model. Furthermore, all but one of the equations for the monetary and labor sectors are in this group, many having ratios as low as one-half.

The consequences of serial correlation in the residuals of a quarterly model are greater than in the case of an annual model, for a quarterly model is more likely to contain lagged endogenous variables. For equations containing lagged endogenous variables, such as (2)-(4) and (9)-(17) in the KBHV model, where ordinarily least-squares would otherwise be appropriate, the estimates obtained in this way are inconsistent.¹⁹ It seems plausible that this result remains true for other methods of estimation appropriate for equations involving current endogenous variables as well.

The presence of serial correlation may be both the result of an incorrect specification of the lag structure and the cause of erroneous statistical results concerning its nature. I have argued the first proposition elsewhere [12], the second follows from the preceding argument. While KBHV cannot be criticized for having failed to employ quite complicated methods of estimation to mitigate the effects of serial correlation, more careful attention to the lag structure might well have reduced the magnitude of the problem.

4. *Lag structure.* Of the 31 stochastic equations in the KBHV model, 15 contain lagged endogenous variables in the final formulation. If we count also those equations in which lagged values enter in combination with a current endogenous variable, the number rises to 19. It is thus apparent that the KBHV model represents a highly dynamic structure. How was this lag structure determined? Except for equation (18), which reflects the outcome of the wage bargaining process, we are given relatively little information on this question.

The lag structure in the wage bargaining equation is justified on institutional grounds; the authors write: "Assuming that wage changes are made for mutually exclusive groups of workers on a twelve-month contractual basis at staggered time points during the calendar year, we should find an average change in wage rates in any particular quarter over the corresponding quarter

¹⁹ See [16]. Consistency is a particularly weak statistical property, so that estimates are pretty bad if they are not consistent. Consistency means essentially that the probability that the estimate differs from the true value tends to zero as the number of observations increases.

of the preceding year to be related to a moving [weighted] average of past price changes and past rates of unemployment. . . . If wage negotiations are evenly spaced . . . the weights will all be equal."²⁰ An additional behavioral lag on the part of unions would result in longer than four-quarter averages but the authors indicate that experiments with alternative lags did not much improve the results.

Except in the case of certain of the labor equations and the four consumption equations, all the lags used are discrete rather than distributed. Thus, for example, the interest rate lagged four quarters enters the production decision equation for metals, machinery, vehicles, and building. Presumably this particular lag reflects the lead of orders over production, but no independent information on the length of this lead-time is given. If lead-times vary considerably for such a diverse mix of products, it can be argued that the interest rate will affect production decisions with a distributed, rather than a discrete lag. If such had been used, it is possible that the effects of changes in the interest rate would have been found to be much greater and a more direct connection might have been established between the real and monetary sectors. The rationale behind the introduction of lagged consumption and exports in the component production-decision equations is that the production decisions depend upon stocks; since figures on stocks are not available, KBHV introduce two of the variables upon which stocks depend. But why have they not introduced lagged production as well, since stocks also depend on this variable?

Distributed lags are used in all four consumption equations. One of the simplest forms of distributed lag models assumes that the effects of past income on consumption decline geometrically as one goes farther back in time; in this case, it is possible to summarize these effects by introducing consumption lagged one period. This is not the form of distributed lag assumed by KBHV; their distributed lag is represented by introducing a lagged eight-quarter, unweighted, moving average of the appropriate consumption variable in each equation. Use of a lagged, eight-quarter, moving average of consumption, however, implies an extremely complicated distributed lag in the effects of incomes on consumption. Furthermore, either form implies that the distributions of lag for wage incomes and property incomes are the same, which seems somewhat implausible. Thus, the approach adopted by KBHV is at one and the same time complex and simplified. Choice of the scheme employed as opposed to the use of a single lagged value of consumption is justified as follows: "If the effect of the distributed lag in income were to be expressed . . . by a lagged consumption term . . . we may find in time periods as short as single quarters that serial correlation in each of the consumption series is so high that it dominates the whole relationship and obscures the influence of other variables. We have tried to avoid this problem by using instead . . . average consumption of the past eight quarters. . . ."²¹

²⁰ KBHV, p. 75.

²¹ KBHV, p. 58. Barger and Klein used the mean value of consumption lagged one and two quarters in their consumption equation and found that this variable dominated; see [1, p. 423]. Nonetheless, they accepted this result as plausible and showed that in the long run the implied income effects were highly significant.

Two points should be made in this connection: First, it is by no means certain that consumption lagged one quarter should not dominate these relationships and that the immediate effects of changes in incomes should be slight. Indeed, the presence of significant positive serial correlation in the calculated residuals of three of the four consumption equations suggests that this may be the case. Second, even if lagged consumption dominates the relationship, this does not mean the *long-run* effects of changes in incomes are slight, only that the effects, whatever they may be, are spread out over a long period of time.

There is no easy answer to the problems of choosing the appropriate lag structure in a quarterly model. The presence of a high degree of autocorrelation in the residuals will make it difficult to avoid attributing more to the lags than they really deserve. One suspects that KBHV experimented with a great many lags before they settled upon the ones they actually used. This is a dangerous, but perhaps unavoidable, procedure. In any case, it would have added a great deal if the details of these analyses had been presented and the actual choices justified by a priori judgment or independent statistical evidence.

III. *Comparison of the KBHV Model with Seven Other Models*

In Table 2 I have compared the KBHV quarterly model for the United Kingdom with six other annual and quarterly models, using for this purpose roughly the same format which Christ used in his earlier discussion of the Klein-Goldberger annual U. S. models [2, p. 390]. The first two panels of the table contain a summary of the two Klein-Goldberger models. The second differs from the first only in the addition of an agricultural sector and the use of two more years for estimation purposes. The third panel summarizes the annual prototype model for the United Kingdom which KBHV developed as a preliminary to their quarterly model. Panels four through six describe Clark's quarterly model, the two Barger-Klein and the Gallaway-Smith quarterly models of the U. S. economy. The final panel presents information on the KBHV quarterly model for the United Kingdom in the same format as for the other six. While Table 2 more or less speaks for itself, there are several points which should be especially noted:

First, the KBHV quarterly model is by far the most disaggregative of the six. Fewer key variables, such as labor force and hours, are exogenous in the KBHV model. As befits the British economy, the international sector is extremely detailed in the KBHV quarterly model, but the prototype annual model is no more detailed than in the Klein-Goldberger U. S. model. All models suffer from a weak monetary sector, and only the Clark model includes inventories as endogenous. Although the instruments of fiscal policy play an important role in both Klein-Goldberger models and the KBHV model, lack of detail in the monetary sector makes the models somewhat ill-adapted for the comparison of alternative monetary and fiscal policies.

Second, the variables appearing in all of the U. S. models appear more "natural," perhaps because we are accustomed to the national accounting framework. As we have seen, eschewal of this framework by KBHV was a deliberate policy to avoid substantial amounts of interpolation. Since their annual model was largely an experimental one used in the formulation of their

TABLE 2—A COMPARISON OF THE KBHV MODEL WITH SIX OTHER ANNUAL AND QUARTERLY MODELS

Model	Years	Stochastic Equations + Identities = Total Equations	Main Endogenous Variables	Main Exogenous Variables	Dynamic Features
Klein-Goldberger Annual U.S. No. 1	1929-41 and 1946-50	14 + 5 = 19	consumption gross investment depreciation imports corporate saving private employees national income and four components general price level general wage level 2 interest rates capital stock 2 liquid asset components corporate surplus	government expenditures 4 components of direct taxes indirect taxes import prices excess reserves 5 population and labor force variables weekly hours	lags of up to 5 years cumulated investment and corporate savings
Klein-Goldberger Annual U.S. No. 2	1929-41 and 1946-52	15 + 5 = 20	same as No. 1 and farm price level	same as No. 1	same as No. 1
KBHV Annual Prototype Model for the U. K.	1947-56	11 + 0 = 11	industrial production private employees imports final domestic demand ^a consumption weekly earnings total no. of employees general price level non-wage personal income interest rate unemployment	exports tax rate on wage and salary income tax rate on non-wage personal income government current expenditure on goods and services tax rate on company income import prices gold and dollar reserves bank rate money supply	distributed lag in consumption equation discrete lag of 1 period in the effect of price level on wage rate
Clark Quarterly U. S.	1921-41	5 + 2 = 7	consumption imports gross producers' durables gross private construction net change in inventories sales GNP	government purchases and transfers exports money supply wage rate ^b population ^c	peak previous GNP in consumption equation distributed lag in effect of sales on inventories cumulated gross producers' durables and private construction
Barger-Klein Quarterly U. S. No. 1	1923-40	3 + 3 = 6	consumption wages and salaries paid by private industry non-wage income net private domestic investment capital stock net national income	government wages and salaries indirect taxes less subsidies government purchases plus net foreign balance	distributed lags in all three stochastic equations first-order autoregressive schemes assumed for residuals in consumption and investment equations ^d purely recursive structure

TABLE 2—*Continued*

Model	Years	Stochastic Equations + Identities = Total Equations	Main Endogenous Variables	Main Exogenous Variables	Dynamic Features
Barger-Klein Quarterly U. S. No. 2	1923-40	3+3=6	same as No. 1	same as No. 1	same as No. 1 except current wage income enters the consumption equation and the residuals in this equation are assumed to be serially uncorrelated
Gallaway-Smith Quarterly U. S.	1948-57	3+1=4	consumption gross investment government expenditures gross national product	money supply taxes	lags of up to two quarters use of first differences
KBHV Quarterly Model for the U. K.	1948-56	31+6=37	industrial production and 4 components 4 categories of consumption general price index and 4 components price of fixed assets export prices interest rate labor force 2 categories of employment hours wages and weekly earnings wage and salary incomes profits total imports and 3 components 4 categories of exports by destination 3 categories of exports by commodity type	import and durable materials stocks gold and dollar reserves government employment government expenditures on current and capital account 4 tax rates money supply bank rate general import price level and 4 components 3 foreign price levels 6 foreign levels of economic activity 2 types of foreign held sterling balances	distributed lags in consumption and wage bargaining equation discrete lags of 1, 2, 3, and 4 quarters

^a Consumption+gross domestic investment in fixed capital+current government expenditures on goods and services.

^b Used to deflate money values of all variables except population.

^c Used to compute "full-employment" GNP.

^d Let u_t be the residual at time t . To assume that u_t obeys a first order autoregressive scheme means that

$$u_t = ru_{t-1} + e_t$$

where e_t is not serially correlated, r is the correlation between u_t and u_{t-1} . The purely recursive structure of this model allows the use of least squares throughout, which in turn makes it possible to estimate a first-order autoregressive scheme in the residuals simultaneously with the structural equations.

quarterly model, KBHV have used aggregates of variables appearing in the latter. An expansion of these models would bring them closer to the national accounting framework and would make it easier to compare the U. K. models with both the annual U. S. models and the detailed quarterly U. S. models which will soon appear.

Finally, the treatment of the problem of serial correlation by Barger and Klein is by far the most sophisticated of all the models compared in Table 2. They have assumed serial correlation in the residuals and in several cases have estimated the correlation of the current value of the residual with its lagged value as part of the process of estimating the parameters of the model. In view of the serious nature of this problem in quarterly models, it is much to

be regretted that KBHV could not employ such a procedure, at least in the estimation of those equations for which least-squares methods would have been appropriate.

Forecasts are a useful way of forming an over-all evaluation of a model, especially if they are not based upon hindsight, i.e., if the data for the forecast were not available when the model was formulated and estimated. KBHV give quite detailed descriptions of the construction of the series which they used, but they do not present any forecasts from the model in the present volume. Since construction of subsequent data according to recipe would be quite difficult for any but the authors, they have, however, been good enough to publish a continuing series of forecasts and post-mortems in another place.^{21a} These form a valuable supplement to their book.

IV. *Some Implications of the KBHV Model for Anti-Inflationary Policy in the United Kingdom*

Because of the way in which the KBHV model is formulated, and because the interest rate was found to be statistically insignificant in the third equation, it is not possible to use the model to analyze the effects of alternative monetary and fiscal policies on the price level. However, under certain reasonable assumptions, it is possible to analyze the effects of direct import controls and wage restraint in a fairly simple manner. To do so will provide an illustration of the way in which an econometric model can be used, and the specific example chosen may be of some interest in connection with current policy discussions in the United Kingdom.²²

The way in which the implications of an econometric model should be deduced may be summarized as follows:

Step 1: Solve the entire model for all the current values of the endogenous variables as functions of (a) their own lagged values, and (b) the values of exogenous variables.

Step 2: The system obtained in Step 1 is a system of difference equations in the endogenous variables of order equal to the greatest lag which occurs. In principle, it is possible to solve this system for the current values of the endogenous variables as functions of (a) time, as measured for an arbitrary origin, $t = 0$, (b) their own initial values at $t = 0$, and (c) current and lagged values of the exogenous variables. Thus the lagged values of the endogenous variables are eliminated.

Step 3: Find the *initial impact* of a change in a policy instrument or some other exogenous variable on any given endogenous variable by differentiating the appropriate equation in the system obtained in Step 1 with respect to that instrument or exogenous variable.

^{21a} See R. J. Ball, A. Hazlewood and L. R. Klein, "Econometric Forecasts for 1959," *Bull. Oxford Inst. Stat.*, Feb. 1959, 21, 3-16; L. R. Klein, A. Hazlewood and P. Vandome, "Re-estimation of the Econometric Model of the U.K., and Forecasts for 1961," *Bull. Oxford Inst. Stat.*, Feb. 1961, 23, 49-66; and A. Hazlewood and P. Vandome, "A Post Mortem on Econometric Forecasts for 1959," *Bull. Oxford Inst. Stat.*, Feb. 1961, 23, 67-81.

²² As this is written, December 8, 1961, it is possible to find lengthy discussions of wage "restraint" in any recent issue of the *Economist*.

Step 4: Use an appropriate equation obtained in Step 2 to trace out the effects over time on an endogenous variable of a permanent or a temporary change in an instrument or exogenous variable.

If the model is fully linear, there are normally no difficulties in carrying out Step 1.²³ Extensive calculations may be involved, however, if the system is large, and the KBHV system is quite large. Furthermore, it is nonlinear, which presents some additional, although not too serious, difficulties. Step 2, however, may be very difficult to carry out in practice and is seldom, if ever, attempted for a model of large size and involving lags of a high order. Consequently, Step 4, which depends on Step 2 is not generally carried out either. In the example, only the initial impact of the policies will be discussed.

In certain models it is not necessary to solve the whole system in order to analyze the effects of certain policies. Imports, for example, are determined solely by lagged values of consumption and exogenous variables by equations (9)-(11) and (33) of the KBHV model. In the present example, I shall suppose they can be directly controlled by the authorities through such measures as direct import controls. If one also assumes that the labor force is given exogenously (which it is not, in fact, in the KBHV model), then the system consisting of equations (1) the industrial production function, (18) the wage-rate determination equation, (19) the wage-rate earnings spread equation, (20) the hours equation, (21) the labor supply function, (22) the supply function for nonindustrial employment, (23) the hours equation, (24) the price over costs mark-up equation, and (37) the labor force identity, are closed on "current account"; that is, these eight equations determine all eight of the endogenous variables they contain in terms of the two we have assumed to be given, labor force and imports, lagged values of other endogenous variables, and exogenous variables. Included in the latter group is a shift variable, F , in the wage-rate determination equation, which represents the wage restraint exercised during the period before 1952 in which a Labor government was in power; F is 0 before 1952 and 1 thereafter. As we shall see, it is not necessary to interpret this variable as measuring restraint, or rather lack of it, per se, but only as determining the unit of measurement, i.e., a set of conditions against which various degrees of restraint can be compared.

If one is to compare the effects of a great number of policies, it is best to carry out Step 1 in full; if, however, as is the case here, one only wishes to compare two, it is easier to differentiate the system or subsystem first, then solve for the appropriate derivative. Suppressing constant terms, quarterly shift variables, lagged values, and irrelevant exogenous variables, the estimates of the eight equations in the subsystem under consideration are as follows:

²³ If each equation is estimated separately, it is conceivable that the resulting system is inconsistent. Separate estimation does not necessarily imply the use of least squares, however. Each equation is estimated separately by limited-information, or Theil's two-stage least-squares, although the fact that the equation is part of a system is allowed for in a limited way. Only full-information methods or the recently developed three-stage least-squares provide true *simultaneous* estimation of simultaneous equations. Limited-information and, where appropriate, least-squares methods were used for the estimation of the KBHV quarterly model. Two-stage least-squares methods were used in the estimation of the annual prototype model.

$$(1) \quad P = .94(hE_p) + .56I$$

$$(18) \quad w_r = - .091U + .85p + 2.90F$$

$$(19) \quad w_g = w_r + 2.06h + .62\left(\frac{P}{hE_p}\right)$$

$$(20) \quad h = .085P$$

$$(21) \quad E_t = - .029U$$

$$(22) \quad E = 1.35E_p - .022U$$

$$(24) \quad p = .42w_g$$

$$(37) \quad U = 18.1E_t - 17.2E$$

It should be noted that in the original, equation (18) expresses the *change* in w_r over its value four quarters ago as a function of an average of current and past unemployment, an average of current and past price level changes, and the shift variable F . Thus, with a constant level of unemployment and a constant price level, wages could be expected to increase 2.9 index points per annum in the absence of such restraint as occurred during the period before 1952 when the Labor Party was in power. The index for w_r is defined so that its average in 1948 is 100. Thus, the unit of "wage restraint" implied is that in the absence of which wages, as measured in this index, would increase by 2.9 points per annum.

Differentiating the system with respect to imports and solving for $\partial p/\partial I$, the derivatives of the price level with respect to the level of the index of import volume, we find

$$\frac{\partial p}{\partial I} = .27$$

when all indices are set equal to 100.²⁴ Differentiating with respect to "wage restraint" and solving for $\partial p/\partial F$, we find

$$\frac{\partial p}{\partial F} = 2.8$$

at values of the indices equal to 100. Thus, a ten point restriction in the index of import volume is roughly equivalent to the type of wage restraint which occurred during the period in which the Labor Party was in power. Without knowing how difficult the one might be to achieve as compared to the other, and without computing the effects of the two alternatives on other important variables in the system, it would be rash to draw any more definitive conclusions as to the appropriate anti-inflationary policy. Furthermore, the above analysis only shows the initial impact of the alternative policies and does not trace out the implications of these policies over time.

²⁴ This step is necessary because of the nonlinearity of some of the equations. The nonlinearity implies that certain derivatives depend on the levels of some of the variables.

The KBHV volume contains relatively little of this type of analysis, perhaps because of space limitations. It would not, however, have required more than three or four additional pages to present the results of Step 1, that is, the current values of the endogenous variables as functions of their own lagged values and the values of the exogenous variables. To have done so would have greatly facilitated the uses of the model for policy purposes and enhanced the value of the book.

V. Conclusions

An Econometric Model of the United Kingdom is an important and interesting book. It is important because it represents the first serious attempt at a large-scale quarterly model and because it concerns the United Kingdom. It is interesting because the British economy is so different from ours in many respects and because the special problems of quarterly models are brought out so nicely in the course of the book.

The chief defect of the model is the lack of detail in the monetary sector and the lack of connection between the real and monetary variables of the model. The authors leave much to be desired in their treatment of the problem of serial correlation, and have omitted a great deal of valuable detail on the process by which they determined the lag structure which was used. Although they have carefully described the construction of the series used to estimate the model, it is not possible to reconstruct the series using only the information provided. Presentation of the model in solved form would also have been desirable, since this would facilitate the drawing of policy conclusions as well as forecasting.

But one cannot have everything. While the authors have provided something which is less than perfect, it is nonetheless of great value.

REFERENCES

1. H. BARGER AND L. R. KLEIN, "A Quarterly Model for the United States Economy," *Jour. Am. Stat. Assoc.*, Sept. 1954, 49, 413-37.
2. C. F. CHRIST, "Aggregate Econometric Models," *Am. Econ. Rev.*, June 1956, 46, 385-408.
3. C. CLARK, "A System of Equations Explaining the United States Trade Cycle, 1921-41," *Econometrica*, Apr. 1949, 17, 93-124.
4. J. DURBIN, "Testing for Serial Correlation in Systems of Simultaneous Equations," *Biometrika*, Dec. 1957, 44, 370-77.
5. J. DURBIN AND G. S. WATSON, "Testing for Serial Correlation in Least Squares Regression, II," *Biometrika*, June 1951, 38, 159-78.
6. L. E. GALLAWAY, AND P. E. SMITH, "A Quarterly Econometric Model of the United States," *Jour. Am. Stat. Assoc.*, June 1961, 56, 379-83.
7. B. HART AND J. VON NEUMANN, "Tabulation of the Probabilities for the Ratio of the Mean Square Successive Difference to the Variance," *Annals Math. Stat.*, June 1942, 13, 207-14.
8. L. HURWICZ, "Variable Parameters in Stochastic Processes: Trend and Seasonality," in T. C. Koopmans, ed., *Statistical Inference in Dynamic Economic Models*, New York 1950.

9. L. R. KLEIN AND R. J. BALL, "Some Econometrics of the Determination of Absolute Prices and Wages," *Econ. Jour.*, Sept. 1959, 69, 465-82.
10. Y. MUNDLAK, "Aggregation over Time in Distributed Lag Models," *Internat. Econ. Rev.*, May 1961, 2, 154-63.
11. M. NERLOVE, "On the Estimation of Long-Run Elasticities: A Reply," *Jour. Farm Econ.*, Aug. 1959, 41, 632-40.
12. M. NERLOVE AND W. ADDISON, "Statistical Estimation of Long-Run Elasticities of Supply and Demand," *Jour. Farm Econ.*, Nov. 1958, 40, 861-80.
13. G. H. ORCUTT, "Measurement of Price Elasticities in International Trade," *Rev. Econ. Stat.*, May 1950, 32, 117-32.
14. E. A. RADICE, "A Dynamic Scheme for the British Trade Cycle, 1929-37," *Econometrica*, Jan. 1939, 7, 47-56.
15. J. TINBERGEN, *Business Cycles in the United Kingdom, 1870-1914*. Amsterdam 1951.
16. J. WISE, "Regression Analysis of Relationships between Autocorrelated Time Series," *Jour. Royal Stat. Soc. (Ser. B)*, 1956, 18(2), 240-56.
17. A. ZELLNER, "Econometric Estimation with Temporally Dependent Disturbance Terms," *Internat. Econ. Rev.*, May 1961, 2, 164-78.

COMMUNICATIONS

For an Inflation-Proof Economy

"Inflation's evil can even be found in the current recession. Action to fight the decline was inhibited by fear of contributing to inflation in the future. So once again, it is revealed as the enemy of stable growth" [5, p. 1]. This quotation is not unique; indeed the literature on fiscal policy often stresses the difficulties of correct timing, and the dangers of promoting one evil while fighting the opposite one. It follows that the costs of inflation are not limited to undesirable changes in income distribution and in the allocation of resources, but, indirectly, as a result of the very fear of inflation, also include an adverse effect on the level of production itself. Samuelson and Solow estimate that in the United States price stability would involve 7 or 8 per cent unemployment, instead of the 2 or 3 per cent that are unavoidable because of frictions [13]. A. P. Lerner concludes that because of much part-time work and job protection, the reduction of output would be of the order of magnitude of \$30 to \$50 billion at the current level of GNP [7]. This compares with \$35.6 billion, the individual income tax yield in 1958, and with \$26 billion, the budget expenditures of the federal government on international affairs and finance, veterans' services and benefits, agriculture and agricultural resources, national resources, commerce and housing, interest and general government [16]. This cost is obviously in addition to the costs of the inflation that does take place.

Yet this paper is not an additional warning against inflation or an exposition of new anti-inflationary devices. The cumulated knowledge of the mechanism of inflation is, under most circumstances, sufficient for practical purposes of anti-inflationary policy. The common failure of such policies is more often to be ascribed to reluctance due to divided judgments than to ignorance. Rather than suggest new methods for fighting it, the point to be made here is that inflation could, by some institutional arrangements, be deprived of most of its disadvantages.

Definitions of inflation are numerous. Its essence is a rise in prices, but its evils to those who suffer from it and its blessings to those that gain by it would *not* have occurred if *all* prices rose to the same extent. If prices of skilled and unskilled labor rise at the same rate as do prices paid for the supply of capital, both risky and relatively safe, then nothing at all happens to the distribution of incomes. Something does happen, of course, to the value of a unit of money, but, for the moment only, let us disregard that. In practice, some prices are contractually fixed, or at least somewhat rigid, so that relative prices do change when inflation takes place. It is the change in *relative* prices that may impoverish workers, or rentiers, or holders of cash and bank deposits, or pensioners or whoever gets a contractual or semicontractual payment. Needless to say this very impoverishment must have benefited somebody else in governmental or in other sectors.

The allocational effects of inflation, good and/or bad, also depend on changes in relative rather than in absolute prices. Since the rate of return—adjusted for changes in the price level—on savings that are not directly invested by those who save, might become very low during inflation, if positive at all, such savings might decline considerably. This does not necessarily mean that there will be a decline in investment as well; that will depend on the effects of inflation on the distribution of incomes and wealth, on the propensities to consume and to invest, on the rate of real profits, on whether fictitious inflationary profits bring about capital consumption in some industries, and on other factors. In any case, total investment figures might be misleading if some investments are uneconomical, being based on negative interest rates. Because of changes in relative remuneration, and especially because of the rising profitability of speculation, there might also occur undesirable changes in the occupational distribution. Tremendous amounts of energy might be consumed in searches for hedges against inflation, and capital flight abroad may become attractive. This very partial list of the serious costs of inflation indicates, I hope, some awareness on my part of the problems involved. I plead non-guilty in advance to any accusations of a sympathetic approach to inflation, but I do not approve of a passive attitude towards an evil that a lot can be done about. It certainly hurts to see anti-inflationary policies so often ineffective.

Since inflation keeps rearing its ugly head, it is only natural that victims look for protective methods. Such methods include escalating wages and salaries in relation to a price index agreed upon in employment contracts [9], and, for the benefit of unearned incomes, issues of constant-purchasing-power bonds [15] [2] [4]. Arrangements like these are becoming common. Wages have been at least in part automatically escalated in relation to cost-of-living or similar indices in Chile, Denmark, France, Finland, Israel, Italy, Norway, and in some branches of industry in England; in the United States, the use of sliding-scale agreements is limited to a rather small fraction of the working class [1]. The use of constant-purchasing bonds, despite the declared support of W. Stanley Jevons, Alfred Marshall, Irving Fisher, Milton Friedman, Fritz Machlup, Sumner Slichter and many economists in other countries [2, p. 2] is still rather limited. In his survey, Finch mentions the opposition to the idea not only by financial experts, like Otto Niemeyer of the Bank of England, and by business economists, but also by Walter Bagehot in 1875, and by the Treasury and the Council of Economic Advisers in 1952. That the opposition has not subsided is indicated by the rather critical attitude of Robson [11] and Rubner [12] (and for a more unsympathetic attitude, see [14]). Indeed although changes in costs of living are naturally an important factor in wage negotiations wherever they take place, even wage escalations have come under the attack not only by anti-inflation-oriented pressure groups but by economists who object to such devices on the grounds that they start or accelerate a wage-price spiral and thus hurt the unprotected sectors. Naturally the more galloping the inflation, the closer the unprotected sectors get to destruction; and it is a legitimate criticism of plans to protect from inflation specific sectors or groups that the costs

involved might be paid by other inflation victims rather than by the beneficiaries.

Actually the prospects for an acceleration of inflation are not as strong when protection becomes general for then there is less *motivation* to inflate. But in any case, a quicker inflation *mutatis mutandis* does not necessarily imply a worse inflation. Although interpersonal utility comparisons must be made before partial protection plans can be legitimately either condemned or recommended, no such comparisons are needed for a wholehearted endorsement of schemes for a general protection against inflation.

What is suggested here is indeed that, unless explicitly denied in contracts, all contractual payments should be escalated in relation to a price index agreed upon for the purpose. Thus all receivers of wages, salaries, rents, interest, pensions, and other transfer payments—all recipients of income payments that were agreed upon in exact and definitive money units—will be protected from inflation. All that is required is a clause in contracts stating that all money payments explicitly stated relate to a given date, and should be adjusted according to a conversion factor derived from a price index agreed upon. Indeed the experience of many countries indicates that wages, salaries and pensions could be protected from inflation with comparative ease.

But it would not be sufficient to protect income payments only; all payments, including capital payments (both interest and principal) should be submitted to the same kind of escalation. In spite of much criticism, mainly based either on some particularly unfortunate forms of escalation or on attempts of some governments to rig the price index or to evade their obligations in other ways, the experience of other countries does not indicate that constant-purchasing-power bonds are impractical; and under a system where automatic protection from inflation is offered to everybody who wishes it, they lose most disadvantages. Both interest and repayment-values should be escalated, with the market price of bonds, both escalated and nonescalated, and of equities at any particular moment determined by the market.

It is important to include money in this arrangement, for otherwise there will still remain an excise on holding money balances with all its welfare implications. But the compensation of holders of money balances should not be made by means of money creation. It is the decline in the value of real balances that ultimately closes an inflationary gap, so that to increase money balances whenever the price level rose would deprive the system of its equilibrating factor; and the increase in prices, though harmless, might be infinite, so that the economy would regress into the barter stage where, of course, inflation cannot take place. However, this will not take place if the compensation of money-holders is brought about without increasing the nominal value of the money supply. Such compensation in the case of privately-created money should not be very difficult: since bank loans will be escalated, banks may easily guarantee the escalation of the equal amount of bank deposits created by the loans. The nominal increase in bank deposits following an increase in the official price-index will be offset by either decreases in bank deposits or in the amount of money notes outstanding when the loans are

repaid. As to the publicly-created part of money supply, since the whole purpose of the plan is to cancel inflation as a tax, the government should compensate holders of money notes, plus the excess, if any, of bank deposits over bank loans, out of ordinary budget revenues. Technically the escalation of money notes will be much easier if made also through the banking system. If the increase in the price level is considerable, people will protect their money balances by depositing them, even for very short periods, in banks.

For practical purposes changes in the price index for escalation purposes may have to be computed only several times a year or less, unless the inflation is galloping. And although it might appear that galloping inflation is practically assured under the proposed program, especially since many prices, like rent, entering into the computation of the index will themselves be automatically escalated, there are factors working in the other direction: the lack of motivation to inflate if it is realized that nobody is going to win (or lose) by it; and the lack of inflation-induced and inflation-creating increases in the velocity of circulation.

Naturally the more frequent the changes in the "determining" price index the more equitable the system, not only because of the smaller lags between the changes in prices and the compensations for such changes, but because discrete changes in the index create arbitrary differentials between payments before and after an index change. Yet because of aspirations towards practicability it is not suggested that the index be smoothed to a daily trend, or that retroactive adjustments in transactions already closed be made when changes in the index are announced. We hope that the payment structure in the economy will adjust itself to the dates when "official" changes in the index are to be expected with as little ill effects as possible.

All this seems troublesome, and it is. But all the nuisances of the system should be compared with the benefits involved which, tautologically, should be equal to the costs of inflation. How many billions of dollars worth of benefits are sufficient to justify the costs?

The rise of prices in an inflation-proof economy may (though it does not have to) be very high. This price rise, however, is devoid of distributional and allocational effects, and most importantly, recessions in this economy would probably be much briefer and milder; for in this economy no fiscal or monetary measure against recession (which may take only the form of a decline in the rate of growth of production) should be used hesitatingly because of worries lest it overshoot the mark and generate the other evil, inflation. Inflation will have lost its terror.

Is anything wrong with this scheme of sterile or functionless inflation? Opposition to it might often be based on conservatism (in the sense of objection to change), misunderstanding, sheer partisanship, or on intrinsic weaknesses of the scheme. Strongest resistance might come from those who like to condemn inflation but would hate to see it go. That there are sectors in the economy that benefit from inflation is only the mirror image of the distributional effects of inflation, whatever they are. The beneficiaries from inflation consist usually of some profit-receivers and net debtors, and may very well include the government, including the legislative bodies. As is well

known, inflation is a convenient tool to lighten the burden of all domestic obligations that are stated in money terms, like interest payments and redemption of national debt, social security and pension payments, and civil service salaries [10]. Moreover, inflation as a financing device has, at least when mild, some obvious psychological comparative advantages, so that the temptation to use it might, occasionally at least, be almost irresistible. Yet, it is hard to think of a desired effect of inflation that could not be brought about by other premediated policies not necessarily entailing inflation. I do not believe that there are circumstances in which inflation would have no alternatives. Arguments to the contrary almost always depend on some kind of "money illusion" which allows inflation to free from private use resources which would be unavailable otherwise. But if "money-illusionless" economies cannot indeed win wars or get developed, why all the talk of the evils of something which society cannot do without? If society cannot do without inflation, it can hardly be an evil.

Some objections to the scheme might be based on a preference for inflationless rather than inflation-proof economies. But nothing in the scheme prevents strict anti-inflationary policies; it only makes the consequences of a failure of such policies socially much less important.

Resistance might also be based on the inadequacy of any price index for the purpose of general protection against inflation. Ideally, one would have to construct a special index for almost every individual, but that is obviously impossible. The index used should be a general index of prices, like the cost-of-living-index, measuring in some sense changes in the value of money. The index should definitely not be the index of the prices of some specific commodities, including gold or foreign exchange. Some supposedly constant-purchasing-power bonds are escalated in relation to the value of gold or to the exchange rate of some foreign currencies. This seems disadvantageous from many points of view. First, in this case there is indeed some form of "abdication of the local currency" which may be demoralizing. Secondly, escalation in relation to such an index does not at all achieve what is supposedly needed; there does not seem to be much of a moral case for adjusting payments because of devaluations (or appreciations) of the external value of a currency unless there are changes in the internal value as well. Thirdly, since it is unlikely that escalation will depend on exchange rates in some nonofficial markets, and since official exchange rates do not change very often, many problems are created by the greater role played here by the time element. Many inequities may be effected between devaluations; there would be quite a burden on, say, anyone who borrowed shortly before a devaluation takes place, and there would be no help at all for creditors who happen to lend just after a devaluation takes place and are repaid just before one. Fear of such cases might result in nerve-racking speculation and make agreements much more difficult to achieve. Another, and important, reason against the choice of such methods of escalation is that economic conditions might require changing the rate of exchange. It seems silly to try to prevent changes that have to take place in relative prices; yet no devaluation could be effective in a foreign-exchange-escalated system.

Similar objections might be raised against the use of a wage index, suggested by Pedersen of Denmark, for constant-purchasing-power bonds. Pedersen's idea was to assure savers of the constancy of the value of their savings in terms of man-hours of work, thus enabling them to participate in the gains from productivity increases, to force them to share in cuts in available resources, and to contribute to price-stability by having labor realize that any wage increase automatically increases the income of bondholders as well. Such an index, however, cannot be applied generally; certainly it cannot be used to protect wage-earners themselves. Moreover, is it clear that savers should participate in the benefits from rises in productivity as a matter of right? It is quite possible that in some countries such systems of linkage have damaged the very idea of constant-purchasing-power bonds more than any other feature.

It should be made clear, though, that devaluation under an inflation-proof economy will not necessarily be less efficient than in a "normal" economy. The purpose of devaluation is to promote exports and import-substitutes industries; under full employment this may happen only at the expense of industries not directly related to international trade, and such industries will not "permanently" decline unless local demand is cut. Whether a devaluation will achieve a continuing effect under "normal" conditions is an open question, and it will remain so in an inflation-proof economy. If a devaluation is accompanied by a strict monetary policy, the price level would hardly change—although the prices of goods and services not traded internationally would go down. In this case the mechanism for protection against inflation will not operate at all. To the extent that monetary conditions allow some increases in the price level, victims will be compensated, at least partly, by private beneficiaries from inflation, like debtors. To the extent that monetary policy is permissive, and if fiscal policy does not substitute socially approved taxes for the inflation-tax intentionally killed by the scheme, devaluation does not have much chance to be permanently effective. But, depending on the importance of the import component in the commodities and services represented in the escalating index, and on the frequency of adjustments, it might take some time for the original change in relative prices brought about by the devaluation to be completely offset.

Often when the issue is raised it is claimed that since a "general" price index is not under the control of any private borrower, private borrowers could not be expected to link their borrowing to such an index. Since allegedly only a government can issue bonds linked to such an index, the argument would proceed, this is just another scheme to favor the public sector. All that a private borrower can do, it is implied, is to guarantee the value of the loans he gets in terms of the prices of his own products. Bonds linked to the price of particular commodities, like railway tickets, electricity, or cement, exist and may satisfy some specific demands (see [4], [15, pp. 73-76]) but as inflation hedges they are certainly inferior to bonds linked to a general price index. Moreover, producers with liabilities escalated in relation to prices of their own products might tend to maintain prices which are especially rigid. Since every price increase increases proportionally the value of debt, many

firms might often find themselves in an impasse. Price rigidity is certainly not a solution to inflation; neither are bankruptcies. As a matter of fact, when taxes and subsidies are brought into the picture, it is not clear that it always pays for a producer to escalate loan liabilities in relation to the market price of his own products rather than to the general price level. But in any case the borrower is only one party to the transaction, and it is not self-explanatory why his interests should rule. It should not be so difficult for firms to conduct their borrowing as if inflation were not going to take place at all. Changes in the price level change the real terms of contracts; all that is suggested here is to undo the change.

Needless to say the price index chosen for escalation is going to be a tool of great political importance. Changes in this index might make news headlines, for indeed they will be important news for everybody. Pressure groups will do their best to influence the index, and government and Congress certainly have means to change it. It is not at all clear that there is anything wrong with such developments. Surely there is no intention to deprive the government of means to redistribute incomes. The legislative branch remains completely autonomous to decide in what way to finance expenditures. There is no contradiction at all even between an escalated inflation-proof economy and measures imposing taxes on increases in money payments which result from the very escalation. Such taxes, being explicit, reflect a social decision. And the main evil of inflation is not in its distributional effects on incomes and net worths, but in the lack of social-decision backing for such effects.

Since no economy is a closed economy, objections might be based on balance-of-payments arguments. Although it is not obvious that general escalation would necessarily increase the rate of inflation, such a possibility is not ruled out. If this happens, or more exactly if the effect of escalation on the rate of inflation is greater in one economy than in other economies, then adverse developments may indeed follow in the balance of trade of that economy. In the capital-payments sector of the balance of payments there may be actual improvement over a nonescalated case: certainly there is less incentive for capital flights abroad, for they would be worth while only if the rate of devaluation were expected to exceed the internal rate of price increase. Capital flights might still take place, but not any more as hedges against inflation. In spite of this it is not denied that escalation may, in some countries, make devaluations more frequent (and in other countries necessarily more rare). But, apart from considerations of national prestige, devaluation should, in the new setting, cause much less difficulties than in the existing system.

It might be argued—is it not obvious that I am trying to think for possible opponents?—that it would be very difficult to determine the rate of return to be paid on inflation-proof bonds. But like any rate of return, it will be determined by supply and demand.

It may also be argued that purchase of common stocks may be currently used to protect the value of savings against inflation. Even if true, and in many economies in many periods the performance of stocks in this respect has

been far from outstanding, escalated bonds are certainly an improvement, at least for nonspeculative savers. Since inflation-proof bonds are to some extent substitutes to stocks, the demand for stocks will probably be reduced. To the extent that profit-receivers have been benefiting from inflation, escalation would reduce the rate of profits, and thus produce another factor reducing the demand for stocks.

The idea presented here is certainly not original. All that it adds to previous proposals is the suggestion that escalation be general. If I have omitted some basic economic factors, I certainly wish to be told; if on the other hand the factors omitted are not economic but social-psychological if, say, changes in the value of a unit of money are demoralizing even if nobody is economically hurt—then this paper along with most of the economic literature on anti-inflationary policy has been completely misdirected.

AMOTZ MORAG*

REFERENCE

1. C. BRESCIANI-TURRONI, "Working of the Sliding Scale Applied to Wages in Italy," *Rev. Econ. Conditions in Italy*, Banco di Roma, Nov. 1956, 10, 519-47.
2. D. FINCH, "Purchasing Power Guarantees for Deferred Payments," *Staff Papers*, International Monetary Fund, Feb. 1956, 5, 1-22.
3. R. GOODE, "A Constant Purchasing Power Bond," *Nat. Tax Jour.*, Dec. 1951, 4, 332-40.
4. JOHN HEIN, "A Note on the Use of Index Clauses Abroad," *Jour. Fin.*, Dec. 1960, 15, 546-52.
5. T. V. HOUSER, "The Cruellest Tax," CED pamph., New York, 1958, pp. 1-23.
6. H. S. HOUTHAKER, *Protection Against Inflation*, Study Paper No. 8, pp. 117-135, in materials prepared in connection with the Study of *Employment, Growth and Price Levels* for the Joint Economic Committee, 86th Cong., 1st sess.
7. A. P. LERNER, "Discussion," of papers on the Problem of Stable Price Level, *Am. Econ. Rev., Proc.*, May 1960, 50, 215.
8. AMOTZ MORAG, "Escalator Clauses and Indirect Taxes," *Indian Econ. Jour.*, Oct. 1955, 3, 154-67.
9. JØRGEN PEDERSEN, "Wage-Fixing according to the Price Index," *International Economic Papers*, No. 4, pp. 70-108, esp. 85-92.
10. D. H. ROBERTSON, "Creeping Inflation," in *Economic Commentaries*, London 1956, p. 124 fn.
11. PETER ROBSON, "Index-Linked Bonds," *Rev. Econ. Stud.*, Oct. 1960, 28 (1), 57-68.
12. A. RUBNER, "The Abdication of the Israeli Pound as a Standard of Measurement for Medium and Long-Term Contracts," *Rev. Econ. Stud.*, Oct. 1960, 28 (1), 69-75.

* The author, lecturer at The Hebrew University, Jerusalem, Israel, wishes to express his debt for many instructive comments to Richard A. Musgrave and his 1961 seminar in public finance, and to his colleagues, Joseph Attiyeh, Tsvi Aphir and Michael Michaely.

13. P. A. SAMUELSON AND R. M. SOLOW, "Analytical Aspects of Anti-Inflation Policy," *Am. Econ. Rev., Proc.*, May 1960, 50, 177-94.
14. FEDERAL RESERVE BANK OF NEW YORK, "Creeping Inflation," *Fed. Res. N.Y. Mo. Rev.*, June 1959, 86-94.
15. UNITED NATIONS, ECONOMIC COMMISSION FOR LATIN AMERICA, "Index Clauses in Deferred Payments," *Econ. Bull. for Latin America*, Oct. 1957, 2, 73-75.
16. U. S. DEPARTMENT OF COMMERCE, *Historical Statistics of the United States, Colonial Times to 1957*, Washington 1960, 718-23.

Credit Controls and Financial Intermediaries: Comment

A recent article [1] in this *Review* presents some conclusions and arguments on credit controls and financial intermediaries which are open to serious challenge. In particular, the conclusions that (a) the sale of non-marketable government securities to commercial banks is an effective means of increasing control over their liquidity, and (b) reserve requirements have a weaker credit-damping effect on nonbank financial intermediaries than on banks are both, I suggest, misleading if not wrong. Likewise the discussion of reactions by economic units to conditions of excess demand for money and of measures to impair the liquidity of nonbank intermediaries is inadequate and inaccurate.

I. Nonmarketable Government Securities and Commercial Banks

After first surveying the ineffectiveness of various other proposals for controlling commercial bank credit, Alhadeff suggests (p. 658) that, with the exception of short-term securities to serve as liquidity reserves, *only* nonmarketable government securities be sold to banks, thereby preventing activation of idle balances through bank sales of securities. Alhadeff seems unaware of the many pitfalls to such a proposal. First, he underestimates the difficulties in implementation. Second, he ignores some undesirable repercussions, if the proposal could be implemented. Third, his emphasis on long-term securities might be misplaced; for credit control purposes, movements in bank holdings of other maturities are of greater importance than his analysis suggests. Each of these points will be discussed in turn.

Difficulties in Implementation. Selling nonmarketable government securities to banks is likely to prove difficult and costly because bank portfolio practices in general, and special tax considerations in particular, rely heavily on marketability.¹ With respect to bank portfolio practices, Alhadeff argues (p. 657) that nonmarketables would replace "... the potentially troublesome government securities purchased with funds which are temporarily surplus on the customer loan market and which are held for income purposes pend-

¹ "This would preserve for banks most of the advantages of government security holdings . . . fully effective without compulsion on banks to hold government securities. . . . The main disadvantage for individual banks would be the greater inflexibility in portfolio management" [1, p. 658]. Inferentially, Alhadeff's discussion and rejection of other credit control proposals (pp. 656-57) supports the proposition that he considers his proposal very workable and feasible.

ing a revival of loan demand." If, however, long-term securities are as important a source of liquidity as Alhadeff insists, would not banks have to be generously compensated for denying themselves access to this source? Moreover, would not the banks' natural preference (based on good customer relations) for loans rather than securities, the likely availability of other marketable securities, and the not unattractive option, under the circumstances, of waiting for the cyclical upturn, also mean that substantial yield inducements would be needed to persuade banks to hold nonmarketables? Alhadeff faces a fundamental difficulty in stressing the problem of curbing bank liquidity (because this carries with it the implication of heavy and active loan demand even though banks might have temporarily surplus funds) while at the same time asserting that banks are at such a loss for alternative asset acquisition opportunities that they would willingly lock themselves into holdings of nonmarketables. Is there a golden moment when the Treasury can finesse, with little or no yield inducement, banks having temporarily surplus funds into taking an inflexible portfolio position?

The large volume of long-term securities in bank portfolios, furthermore, makes replacement by nonmarketables a task of staggering proportions.² Alhadeff, on the other hand, maintains (p. 658) that such a large volume is favorable to the sale of nonmarketables because it "... suggests that suitable alternative outlets for funds could not readily be discovered." The issue here, pure and simple, is the relative bargaining strength of the Treasury and the banks. In view of the constant and immense new money needs—both refinancing and prospective deficits—of the Treasury, Alhadeff misconstrues, as long as compulsion is ruled out, the balance of power between them. Banks are unlikely to be so desperate for assets as willingly to accept nonmarketables, unless persuaded by yield or compulsion; the Treasury is unlikely to be so persistently affluent or blessed with other sources of funds that it can afford to ignore the commercial banks.³ In short, as long as business cycles retain their postwar moderation, a propitious market climate for placing nonmarketables with commercial banks is unlikely.

Secondly, his proposal overlooks the important tax advantages of security transactions to commercial banks. Banks, like other taxpayers, have the incentive of a preferential rate on income arising out of capital gains from security sales. In addition, however, and unlike other taxpayers, banks are allowed to charge off *net* capital losses against ordinary income without limit. Since the timing of security losses and gains can be controlled to a large extent, banks can gain further by concentrating the realization of each in a particular income year rather than let gains and losses offset each other. The larger tax rates on ordinary income lead to greater tax savings when capital losses are offset against ordinary income rather than against capital

² Flow-of-funds end-year data show that, during the 1950's, bank holdings of government securities of greater than one-year maturity ranged from a low of \$35.2 billion in 1953 to a high of \$52.6 billion in 1955 [9, p. 944].

³ Moderate business cycles will tend to be neutral in their impact on relative bargaining power. In the recessionary periods Alhadeff contemplates, the temporarily surplus position of the banks will be matched by an expanding Treasury deficit; in prosperity, although the Treasury will run a surplus, banks will have plentiful alternatives.

gains.⁴ Periods of falling interest rates are thus generally profit-years; periods of rising interest rates are loss-years.⁵ In this way substantial tax savings are possible in the form of either a preferential rate on capital-gains income or net capital losses reducing ordinary taxable income. These tax considerations are especially relevant to Alhadeff's proposal because, to the extent that tax laws facilitate security sales, they could be appropriately changed to impair liquidity without the need to issue nonmarketables. In the absence of such a change, banks would be giving up a considerable advantage by holding nonmarketables; and this too has yield implications.

Yield Premium and Inflation. The issue of yield must be squarely faced. Alhadeff states (p. 658) that ". . . the absence of legal compulsion to hold these securities would help to raise their yields above the levels that might prevail in a completely captive market and *perhaps* above rates on marketables depending on the availability of suitable alternative outlets for surplus funds" (*italics mine*). All the points raised heretofore suggest, however, that a sharp and certain, rather than a moderate and probable, increase in yield would be necessary to place nonmarketables in bank portfolios. Since banks would not be merely inconvenienced by the switch and because they are in a good bargaining position, substantial yield inducements would be needed, and would have to be progressively higher, the greater the amount it is desired to place. Alhadeff's proposal must be evaluated in this context.

Repercussions of Proposal. Even if Alhadeff's proposal could be implemented, its repercussions on the long-term government securities market would be seriously disturbing. A widespread and well-functioning market for long-term government securities is a major reason why they are so extensively held by so many different kinds of economic units. If banks were to be excluded from holding marketables, this restriction of the market would certainly affect adversely the willingness of others to hold them. The resultant constriction of the market for long-term securities, furthermore, would undoubtedly lead to an increase in the bill issue. Such a development would have the perverse effect of increasing bank liquidity because, as

⁴ "For example, if at the end of 1959 a bank held 2½ per cent Treasury notes maturing in February 1963 that had been acquired at par value when they were issued, the bank could, by selling the securities at the December 31 market price of \$92.875 per \$100 par value, establish a loss of \$7.125 per \$100 par value of the notes it held. So long as the bank's securities losses exceeded its gains, it could deduct the loss from ordinary income. The result would be to lower net income subject to tax at the 52 per cent rate (assuming net taxable income exceeds \$25,000), reducing the bank's tax liability by 52 per cent of amount of losses established. The tax saving would then be available for current investment. . . . However, should the bank have experienced long-term capital gains sufficient to cover its securities losses during the taxable year in question, the loss on the Treasury notes would have to be offset against the gains. . . . Thus while it is always possible for a bank to reduce its current tax liabilities by realizing securities losses, the net tax advantage of recording the loss is considerably greater when it can be deducted from ordinary income, which means that securities losses lead to a greater tax saving if they are established during years in which long-term capital gains are not realized" [4, p. 11].

⁵ For instance, the sum of profits on securities sold or redeemed less losses and charge-offs showed a net loss of \$173 million in 1957, a net profit of \$588 million in 1958, a net loss of \$698 million in 1959, and a net profit of \$110 million in 1960 [6, Table 110, pp. 154-55]. These are net figures for all insured commercial banks, and thus the gains and losses of individual banks are set off against each other.

Alhadeff correctly states (p. 658), "for maximum effectiveness, the supply of Treasury bills would also have to be limited." In this way, depending on how large a constriction of the long-term market takes place, Alhadeff's proposal might be self-defeating.

Proposal Misdirected. Lastly, Alhadeff's proposal may be inadequate because it refers only to longer-term securities; other maturities are dismissed as insignificant for credit control purposes. "Bank holdings of government securities for short-term liquidity reserves are not troublesome for credit policy" (p. 657).⁶ But is not this precisely the reverse order of priority needed? Have not short-term securities provided, by and large, the built-in escape route from stringent monetary policy?⁷ For one thing, bank security portfolios reflect liquidity fears, and certainly the objective of portfolio management is to offset, by appropriate maturity-spacing beforehand, the effects of stringency when it comes. For another, selling short-term securities has advantages for banks: the market is broader, and capital losses (to the extent banks do not desire them for tax purposes) are not a problem. There is no lock-in effect which, under certain circumstances [11, p. 106], could occur with long-term securities. Perhaps Alhadeff was misled in emphasizing long-term security sales because he failed to realize that such market activity may be motivated, as indicated previously, by tax considerations as well as by liquidity reasons:

... a bank that considers the advantages of tax saving obtained by realizing losses on its holdings of Government securities to outweigh the disadvantages of showing the losses on its books may simply sell off its existing holdings and reinvest the proceeds in Government securities. Such 'tax switching' is practiced by a number of banks, but no evidence is available on the extent of this practice [4, pp. 12-13].

II. Reserve Requirements for Nonbank Intermediaries

Alhadeff's views on the familiar proposal of reserve requirements for intermediaries need to be reconsidered in several respects:

1. He assumes (p. 659) that reserve requirements will take the form of demand deposits with commercial banks, and on this basis argues that their impact would be comparatively weak since (a) the credit multiplier would not operate (i.e., there would be no leverage effects),⁸ and (b) intermediaries could always obtain additional reserves by selling assets or increasing their

⁶ There is some ambiguity about Alhadeff's categorization by maturity structure. As a rough approximation, he assumes (p. 657) that short-term liquidity reserves consist solely of Treasury bills and certificates, both of which are required by statute to mature within a year or less from the time of issuance. His other category, to be completely replaced by nonmarketables, consists of "longer-term securities." This leaves, however, the 1-5 year maturities in an anomalous position since it is likely that banks do include at least the short end of their 1-5 year holdings in their liquidity reserves, and rely upon them as liquidity vehicles. Thus, even as a rough approximation, confining the notion of short-term liquidity reserves to only bills and certificates may be misleading.

⁷ The relevance of this point would be enhanced if, as argued in the preceding paragraph, the adoption of Alhadeff's proposal should lead to a narrowing of the market for long-term government security issues.

liabilities to holders of demand deposits. Neither of these consequences would follow, however, if required intermediary reserves took the form of, say, balances at the Federal Home Loan Banks.⁸ This would permit a multiple impact on the total supply of intermediary credit through changes in reserve requirements, and would make additional reserves obtainable only at the discretion of the central banking institution. Alhadeff's case rests on a particular institutional form which in itself is not strictly comparable with the operations of the Federal Reserve System.

2. Even if Alhadeff's assumption as to reserves is accepted, a question as to the relevance of his argument arises. He contrasts the comparatively strong impact of an increase in reserve requirements on the credit volume of commercial banks with its weak impact on intermediary credit extension. He argues (p. 660) that "the difference exists because following an increase in reserve requirements, intermediaries could increase the volume of intermediary reserves whereas the banking system could not increase the volume of bank reserves." Yet is not credit extension the fundamental issue rather than the volume of reserves? Alhadeff seeks to justify his emphasis on reserves by abstracting from velocity effects. "In view of these possibilities [i.e., velocity changes] . . . the actual variation in the volume of credit corresponding to different assumptions about changes in reserves may only approximate the variations in credit-granting activities" (p. 659). how

Velocity, though, is the essence of the problem: no matter how credit is extended, are intermediaries or banks, in the circumstances Alhadeff postulates, in a better position to do it? True, intermediary reserves are likely to be increased since intermediaries extend credit mostly through attracting current savings flows whereas banks can extend credit only through idle balance activation by asset sales; but how relevant is this consideration? The real question is empirical: which way offers the greater scope for credit extension—selling old assets to holders of idle balances or attracting the current flow of savings? On the one hand, idle balances are likely to be held by large holders, sensitive to changes in financial asset prices; on the other hand, the current flow of personal savings is likely to be spread more widely in smaller amounts, and to gravitate toward thrift intermediaries. Likewise, commercial banks tend to be more active in portfolio switches, whereas intermediaries tend to maintain their holdings, are more limited in their range of financial assets, and depend upon repayment flows and their success in attracting current savings for portfolio readjustments. Moreover, commercial bank portfolios have shorter maturity structures which also facilitates switching.

For all of these reasons, then, credit extension, as long as the stock of idle balances is large, will take place largely through bank asset switches. As the stock of idle balances diminishes, then the flow of current savings, presumably going mostly to thrift intermediaries, will become more important. Thus the contrasting impact on credit extension which Alhadeff draws depends upon

⁸ Savings and loan associations already hold considerable balances in this form, and threaten to increase these deposits at the expense of their demand deposits at commercial banks as part of their counterattack against commercial bank efforts to alter the tax status of mutual institutions.

the absence of substantial idle balances. If, empirically, idle balance activation is initially likely to be more important, as I suggest, then the weaker impact of increased reserve requirements on intermediaries will not be very relevant. Increased reserve requirements will be unavailing for both banks and intermediaries alike.

3. Finally, Alhadeff neglects to mention that reserve requirements might affect intermediary credit extension through a reduction in earning capacity. If they are forced to hold increased reserves, the reduction in earning assets will impair their ability to attract current savings flows by putting pressure on the rates they can pay. In this way reserve requirements may restrict intermediary deposit growth, and thereby credit extension.

III. *Reactions to Excess Demand for Money*

Alhadeff argues (pp. 662-63) that the public will not significantly shift, during periods of restrictive credit policy and rising interest rates, from money balances to intermediary deposits. Although this is likely to be so, it will hardly be true for the reasons suggested. He implies that holders of money balances may be more attracted to other liquid assets, specifically Treasury bills, because of greater yield; or they may retain their demand deposits because of higher compensating balance requirements or higher service charges.⁹ Surely there is misplaced emphasis here; as argued earlier, intermediary deposits stem largely from households, and not from asset-shifting by holders of large idle balances. Both because households do not generally hold large cash balances and because other holders of idle balances are not greatly interested *at any time* in savings deposits, shifts from money balances to intermediary deposits are not likely to be caused by an increase in the opportunity cost of holding cash balances.¹⁰ Compensating balance requirements, rates on short-term money market instruments, and perhaps service charges are thus not relevant matters since they have little impact on small savers. Indeed at a later point (p. 670), Alhadeff remarks: "To a very great extent, the intermediary deposits accounts are held by small savers who are not accustomed to buying marketable government securities."

Alhadeff also attempts (pp. 664-65) to minimize the extent to which the public will shift among nonmonetary financial assets, more specifically from commercial bank savings deposits to deposits with other intermediaries. In doing so, he underestimates the importance of interest rate differentials in determining the placement of thrift deposits. "Deposit placement as between institutions is a function of many variables . . . and the interest rate is only

⁹ Compensating balance requirements, however, can take the form of time deposits. The banks gain the advantage of lower reserve requirements, and usually the time deposit is noninterest-bearing in such cases. The borrower gets the advantage of obtaining a negotiable instrument, a time certificate of deposit, which may be discounted to obtain additional funds. See [7, p. 122] [5, p. 66].

¹⁰ The latest survey of demand deposit ownership shows that, as of January 25, 1961, the personal deposits of individuals were 29.7 per cent of total demand deposits in insured commercial banks [10, p. 405]. A previous survey [8, p. 380] showed that roughly half of all personal deposits of individuals are in accounts of less than \$5,000.

one of these" (p. 664).¹¹ His point that *relative* interest rate differentials (ratios of effective interest rates paid on savings deposits) have moved sharply against nonbank intermediaries is of little relevance in measuring responsiveness to changing rate differentials, since absolute differentials are more likely to be influential in savings decisions by households. Though these have recently narrowed somewhat, they remain greater than one per cent for savings and loan associations, and slightly less for mutual savings banks.¹² Even more importantly, the *persistence* of a differential (absolute or relative) is likely to be of greater significance than its size. One should not believe in instantaneous causation in these matters; commercial banks had the advantage of being the more familiar and widespread financial institution, and time was needed to gain public recognition and acceptance of the nonbank financial intermediaries. Thus the slower growth in commercial bank savings deposits (and we must eliminate commercial bank time deposits, which have grown more rapidly, in this comparison because they are held largely for nonthrift reasons) is part of a cumulative process in which rate advantages, although narrowing, become more important over time as the public realizes that, in other significant respects, e.g., safety, liquidity, convenience, banks and deposit intermediaries are substantially alike.¹³

This persistent but narrowing interest-rate spread over time is compatible with Alhadeff's point (p. 665) that "... a tight money policy may not widen interest rate differences very much among savings deposit institutions." Indeed, I would go even further than Alhadeff. Banks feel the pinch of tight money more severely. Their reserves are controlled, and as a tight money policy continues, it becomes increasingly difficult to activate idle balances. Savings inflows thus become more important for banks, and they are therefore more likely, subject to limits imposed by Regulation Q, to engage in active rate (and other forms of) competition at such times. When they have surplus funds, they are not very keen about fighting for savings deposits.¹⁴ Deposit intermediaries, on the other hand, depend exclusively on savings flows for portfolio growth, and therefore must cultivate this flow during periods of monetary ease as well. Thus one would expect differentials to narrow during periods of tight money. The continuing gains of savings and loan associations

¹¹ Cf. also n. 10, p. 665 and a previous article, jointly authored by Alhadeff and cited at this point, in which it is maintained that "... the interest rate difference is discredited as the explanation for the relative decline of commercial bank savings" [2, p. 5].

¹² Between 1946 and 1959, the absolute differential between savings and loan associations and commercial banks has ranged from a high of 1.7 per cent in 1953 to a low of 1.2 per cent in 1957. Between mutual savings banks and commercial banks, it has ranged from a high of 1.4 per cent in 1953 to a low of .8 per cent in 1947 and 1959 [12, p. 21].

¹³ This argument applies with much greater force for savings and loan associations than for mutual savings banks because, on the surface, institutional differences seem greater between the former and commercial banks.

¹⁴ "... commercial banks, as an industry—and there are many exceptions—are not too much interested in savings accounts as a steady diet. When they need the money because loan demand is heavy and interest rates are high, they go after savings; when there is a surplus of funds seeking investment, they lose the desire for savings accounts" [3, p. 153].

during such periods despite this (both relative and absolute) narrowing favors my hypothesis about the cumulative impact over time of rate differences.

Alhadeff's discussion (p. 667) of what he terms the availability effect—shifts from savings deposits to demand deposits—also suffers from his failure to distinguish correctly who holds savings deposits. Economic units holding savings deposits are not likely to want to hold increased cash balances. Why should they, when savings deposits provide them with liquidity plus a return on their funds? The high turnover rates on thrift deposits and the high ratio of withdrawals to deposits would seem to substantiate this point. Alhadeff seems to have in mind a liquidity scramble by business holders of commercial bank time deposits. Since by law commercial bank savings deposits are restricted to individuals and nonprofit institutions, and since businesses hold negligible amounts of intermediary deposits, the availability effect is unimportant for savings deposits.

IV. Credit Control and Deposit Intermediaries

In a concluding section on restricting intermediary credit, Alhadeff discusses (pp. 668-70) various possibilities for impairing the liquidity of deposit intermediaries by reducing the volume of intermediaries' reserves available for credit extension.

In dismissing the idea of a uniform ceiling rate imposed on the different thrift institutions to equalize competition and thus reduce intermediary reserves (or retard their growth), Alhadeff argues (p. 669) as follows:

... a ceiling rate set at the same level as the ceiling on time deposit rates would simply permit more intensive product competition by those institutions which now pay more than the ceiling rate. Product competition could then substitute for rate competition and could undermine the attempt to extend the impact of an excess demand for money to the intermediaries. The alternative, which is to set the uniform rate ceiling at the highest level of rates paid by any of the savings deposit institutions, would be ineffective because it would leave existing rate competition unchanged.

I contend, however, that the competitive position of commercial banks is likely to be improved in either case. The scope for product competition by nonbank intermediaries is considerably more restricted than Alhadeff implies; and, as argued above, rate differentials have been the important mainspring for intermediary growth. In a sense, the differential measures the nonprice advantages of commercial banks. Thus a ceiling for all set at the same level as the ceiling on time deposit rates would mean an enormous improvement in the competitive position of commercial banks. Likewise, a uniform ceiling set at a higher level, by permitting banks to pay higher rates *if they wish* (and some have so indicated), would of necessity alter existing rate competition to the advantage of banks.^{14a}

^{14a} This comment was completed prior to the recent upward revision in permissible interest rates that commercial banks may pay on time and savings deposits.

Alhadeff concludes by suggesting that putting pressure on the public's liquidity would encourage a shift toward securities and demand deposits, and away from intermediary deposits, thereby reducing intermediary reserves. With respect to a shift towards demand deposits, we merely repeat that in view of how intermediary deposits are distributed, it is extremely unlikely that such a shift could be induced. With respect to a shift towards securities, his objective is puzzling. Although intermediary reserves might be restricted, the volume of credit would be unchanged. What is to be gained by a switch from indirect to direct credit extension?¹⁵ This makes sense only if Alhadeff is assuming that the shift would be to government securities which would have otherwise been taken up only by virtue of the monetary authorities allowing a sufficient expansion of the money supply to enable banks to hold that additional amount. In this restricted sense, limiting intermediary growth would result in less total credit being supplied than if the government financed itself through the commercial banks. Alhadeff's mention of the "Magic Fives" in this context (p. 670) indicates that such an interpretation may be appropriate. As he suggests, however, resort by the government to bidding away funds from deposit intermediaries raises many problems, particularly with respect to the status of the savings bond campaign, and the anomaly of competing with thrift institutions on the one hand, and helping them on the other by insuring the safety of deposits.

V. A Concluding Observation

Is there not something inherently deceptive and illusory in viewing the problem of credit control as that of finding some novel control technique to place in the hands of our financial authorities? While innovation in forms of control is of undoubted importance, lack of imagination and fertility in devising new credit control schemes has not, on the whole, been the major stumbling block. The difficulty lies, rather, in the inadequacy of our regulatory structure. Financial regulation is of two broad types: we regulate for purposes of economic stabilization and for purposes of guaranteeing the safety, solvency, honesty, and social responsibility of our financial institutions. Only the commercial banks, however, are explicitly regulated on the former basis. And therein lies our dilemma. On the one hand, considerations of equity and the likelihood that other financial institutions will successfully offset its impact preclude the pursuit of monetary policy *à outrance*; on the other hand, we have no economic stabilization-type controls to apply to nonbank financial institutions. No proliferation of *ad hoc* control devices will resolve this di-

¹⁵ The point at issue is how pressure on the public's liquidity affects credit through its impact on intermediary reserves. I am abstracting, as does Alhadeff, from the restrictive credit impact attributable to the reduction in the public's liquidity because of shifting from intermediary deposits to securities. In this connection, however, would not great increases in security yields be needed to persuade the public to react to pressure on its liquidity by becoming even more illiquid? Furthermore, Alhadeff ignores what would be the most likely way of retarding the growth of intermediary reserves as a result of illiquidity: namely, the use of savings deposits to finance current consumption. Perhaps this omission is due to the deliberate exclusion (n. 8, p. 662) from his analysis of the effect of possible changes in expenditure on output.

lemma. More drastic and fundamental regulatory reforms, involving the financial structure as a whole, are likely to be needed.

MARVIN E. ROZEN*

REFERENCES

1. D. A. ALHADEFF, "Credit Controls and Financial Intermediaries," *Am. Econ. Rev.*, Sept. 1960, 50, 655-71.
2. D. A. AND C. P. ALHADEFF, "The Struggle for Commercial Bank Savings," *Quart. Jour. Econ.*, Feb. 1958, 72, 1-22.
3. J. I. BOGEN, "Trends in the Institutionalization of Savings," *Conference on Savings and Residential Financing*, 1958 Proceedings, United States Savings and Loan League, pp. 146-58.
4. S. B. CHASE, JR., "The Lock-In Effect: Bank Reactions to Securities Losses," *Monthly Rev.*, Federal Reserve Bank of Kansas City, June 1960, pp. 9-16.
5. *Business Week*, Oct. 15, 1960.
6. FEDERAL DEPOSIT INSURANCE CORPORATION, *Annual Report*, 1960.
7. FEDERAL RESERVE BANK OF NEW YORK, "Time and Savings Deposits at Member Banks," *Monthly Rev.*, July 1960, pp. 118-23.
8. *Federal Reserve Bulletin*, April 1959.
9. ———, August 1960.
10. ———, April 1961.
11. JOINT ECONOMIC COMMITTEE, *Employment, Growth, and Price Levels*, Study Paper 19, "Debt Management in the United States," by W. L. Smith, Jan. 28, 1960.
12. UNITED STATES SAVINGS AND LOAN LEAGUE, *Savings and Loan Fact Book*, 1960.

* The author is assistant professor of economics at The Pennsylvania State University. He would like to thank his colleague Thomas Iwand for helpful advice.

Credit Controls and Financial Intermediaries: Reply

I welcome this opportunity to amplify the points which Rozen has raised about my paper and to demonstrate that his detailed criticisms have failed to damage either my analysis or my conclusions. I will also show that his criticisms contain serious analytical errors and errors of interpretation.

I. Nonmarketable Government Securities and Commercial Banks

My purpose in this paper was to suggest a relevant and, I hoped, a fruitful line of inquiry and not to lay down final policy judgments in this area. In order to illustrate what I meant by a structural change in lieu of additional controls, I briefly sketched the nonmarketables idea in the first section of my paper. The nonmarketables idea is not the only example of a possible structural change; indeed, another was proposed by Rozen, viz., to eliminate the tax advantage which now facilitates security sales by banks. Any plan to increase the effectiveness of credit policy is going to raise some problems. This reply is not the place to settle whether the nonmarketables or some other

idea (or combination) is the best structural change we can make. That can only be settled by a detailed investigation of the possible alternatives and, in my replies to Rozen's specific objections to the nonmarketables, I do not mean to prejudge the outcome of such an investigation. I will show, however, that Rozen has seriously exaggerated the problems associated with the nonmarketables.

Difficulties of Implementation. Rozen's analysis of the difficulties of implementation is inadequate because he ignores many important facts which would work against his conclusion. First, he underrates the alternatives available to the Treasury by ignoring the possibility of increasing the level of Treasury securities in the portfolios of the Federal Reserve.¹ Second, he overstates the importance to commercial banks of the tax advantage on government securities. Although we need to know more about this matter, one study in the Tenth Federal Reserve District concluded that "... most banks either were unaware of the advantages of establishing tax losses or did not consider them desirable ..."[6, p. 175]. Third, he neglects to mention that banks must hold a substantial amount of government securities as pledges for various purposes, including those required to secure government and trust deposits [12, p. 44]. Fourth, he does not recognize that government securities perform an important role in enhancing the safety of banks. No other earning asset can provide a comparable degree of safety. If a bank did not hold government securities, the supervisory authorities (as well as the bank's management) would undoubtedly insist on a sharp increase in the bank's capital. This would seriously impair stockholder profitability which depends heavily on the leverage provided by a thin equity ratio. ✓

Rozen has strongly overstated the difficulties of implementation because he has not really faced up to the question of whether suitable alternatives exist. In recent years, commercial banks have held the enormous volume of about \$40 billion of marketable government securities with a maturity of one year or more [9, p. 449]. That is why I said that "The present volume of government securities in bank portfolios suggests that suitable alternative outlets for funds could not readily be discovered" [1, p. 658, n. 2]. Under the circumstances, Rozen is not at all convincing when he tries to establish the existence of alternatives merely by *asserting* "the likely availability of other marketable securities" or the "not unattractive option" of holding excess reserves pending the revival of loan demand (p. 186). Moreover, I suggest that it probably would not be attractive to hold idle funds even if other marketable securities could not be found. A banker would have to balance the net income from holding idle funds and then lending them during the cyclical revival against the income that could be earned by investing them in nonmarketables for the entire period. After making this analysis, most bankers, even in the absence of a substantial yield premium, probably would decide not to hold a large volume of idle funds during the slack period. First, government securities provide an important amount of income for banks² and it may not be possible to forego that income ✓

¹ A secular increase has been urged on other grounds in [20, p. 43].

² For example, in 1960, earnings on U.S. government securities as a percentage of total earnings ranged between 15.5 and 26.9 per cent for different size groups of member banks [10, p. 613].

during the slack loan period. Second, even if an individual banker were willing to tolerate short-run operating losses in the interests of a possibly larger return in the long run, he would realize that the losses would disturb the supervisory authorities and probably provoke administrative penalties, restrictions, or even reorganization. Third, it is more expensive for a bank to make loans than to buy government securities. This reduces the expected net return on the future loans and thereby reduces the attractiveness of holding idle funds. Fourth, whereas the income from investing in nonmarketables is certain, the income from holding idle funds and eventually lending is not, and this uncertainty would also reduce the attractiveness of holding idle funds.

Yield Premium and Inflation. I have already stated [1, p. 658, n. 2] that a yield premium may be necessary to put the nonmarketables into effect. But a higher interest cost to the Treasury would not be sufficient to disqualify an anti-inflation scheme, not even if Rozen could prove that the premium would be "sharp and certain." This is an old issue in monetary economics and, at the time of the Federal Reserve-Treasury accord of 1951, it was widely recognized that:

the advantages of avoiding inflation are so great and . . . a restrictive monetary policy can contribute so much to this . . . that the freedom of the Federal Reserve to restrict credit and raise interest rates for general stabilization purposes should be restored even if the cost should prove to be a significant increase in service charges on the Federal debt and a greater inconvenience to the Treasury in its sale of securities for new financing and refunding purposes [19, p. 2].

Rozen's criticism of the nonmarketables must be evaluated in the context of the total cost of an anti-inflation program and not in the belief that, by eliminating the cost of the nonmarketables, we could avoid paying any cost at all.

Repercussions of Proposal. Rozen has greatly exaggerated the extent of the market impact of nonmarketables because he has misconstrued the nature of the existing market for long-term government securities. The liquidity of government securities is undoubtedly important for some investors (especially commercial banks), but Rozen has not recognized that it is much less important for other large investors. How else can we explain the enormous size which the long-term government securities market has attained *in spite of its thinness*? In part, the long-term market is thin³ because many long-term issues are not very large⁴ but the market is also thin because many buyers of long-term securities are not active traders; they buy securities to hold for income. Liquidity is not a serious problem for many large institutional holders and, therefore, the liquid nature of governments is not an important influence in many institutional investment decisions [13, p. 470]. In addition, Rozen

³ This fact has often been noted in the literature. For example [15, p. 123] [11, pp. 47-48] [22, p. 360].

⁴ In the case of many issues, ". . . buyers or sellers are unable to carry out purchases or sales exceeding one-quarter of a million dollars (or less) . . . without substantially changing the price . . ." [11, p. 48].

has overlooked the fact that a higher yield would compensate some holders for the reduced liquidity.

Proposal Misdirected. Rozen's criticism of the nonmarketables on the matter of maturities is mistaken for three reasons. First, Rozen's emphasis on the use of short-term securities to escape from a stringent monetary policy ignores the fact that, in recent years, banks have sold their intermediate-term securities to obtain funds with which to expand loans [22, p. 346]. Under the breakdown mentioned in my paper, this would not have been possible. Second, the criticism is mistaken because it is irrelevant whether banks in past periods have sometimes used their short-term securities to avoid the impact of a restrictive credit policy. Under the nonmarketables idea, the banks would not have this option because the supply of short-term securities would be limited to the amount needed for short-term liquidity purposes.⁵ That is why I stated that "except for short-term liquidity reserves, all other bank-eligible government securities be nonmarketable" [1, p. 658] and then added that "for maximum effectiveness, the supply of Treasury bills would also have to be limited" [1, p. 658, n. 2].

Third, the criticism is also mistaken because, for control purposes, the important distinction among government securities is not, as Rozen seems to think, as to maturities. The maturity classifications are relevant only to the extent that they can approximate the analytical distinctions. The important analytical distinction is between securities which the bank is free to liquidate for loan expansion and those which it is not free to liquidate for that purpose. Securities held for short-term liquidity purposes cannot be liquidated for loan expansion purposes; by and large, other securities can serve that purpose. In principle, it's as simple as that, in practice, it's not. Although bills and certificates are held for short-term liquidity reserves, not all bills and certificates are held for that purpose,⁶ and not all securities held for secondary reserves are bills and certificates.⁷ Similarly, not all investments for income are long-term securities. Under the circumstances, there is no clear-cut association, valid for all times, between the maturity of a security and its availability as a source of funds for loan expansion purposes. *No* classification of securities by maturities can correspond exactly to the analytical categories, and that is why I was careful to state [1, p. 657] that *only as a rough approximation* could we assume that bills and certificates are not troublesome and that the longer-term securities are troublesome.

II. Credit Control and Deposit Intermediaries

Reserve Requirements for Intermediaries. My analysis of reserve requirements concentrated on the differential impact of reserve requirements on the credit volumes of banks and intermediaries. Rozen has failed to refute my conclusion about the differential impact [1, p. 660 and n. 6] for two reasons.

⁵ In practice, some slack would be unavoidable.

⁶ Some bills and certificates are purchased with funds which are temporarily surplus on the customer loan market.

⁷ For example, long-term securities can serve as short-term liquidity reserves when they are within (say) 3-6 months of maturity. However, not all liquidity reserves need to be

First, he has predicated his criticisms on an erroneous inference. Rozen believes that if intermediaries held their reserves in the form of balances at the FHLB instead of as demand deposits at commercial banks, an increase in reserve requirements would bring about a "multiple impact on the total supply of intermediary credit and would make additional reserves obtainable only at the discretion of the central banking institution" (p. 189). He is not correct because the Federal Home Loan Banks' own balances are overwhelmingly held at commercial banks (except for a small amount which is held at the Treasury, and most of the Treasury's deposits are also held at commercial banks). Second, his criticism contains an analytical error. It is possible that, in mentioning the FHLB, he meant to suggest a form he believed to be "strictly comparable with the operations of the Federal Reserve System" (p. 189). However, even if the intermediaries held their reserve balances at the Federal Reserve Banks in the same manner as the commercial banks, an increase in reserve requirements could not ensure a multiple impact for the intermediaries. If both banks and intermediaries held reserves at the Federal Reserve, reserves could flow between them and, to this extent, one or the other would not have to depend exclusively on the central banking institution for additional reserves. The multiple impact could only be ensured by particular reactions of the public [1, pp. 669-70] to pressure on its liquidity when the financial institutions (both banks and intermediaries) adjust their reserve positions to the newly required levels. I stressed those reactions in my paper because they can cause the intermediaries to conform to the requirements of a restrictive credit policy even in the absence of legal reserve requirements.

Weak Impact on Both Banks and Nonbanks. Rozen correctly states that changes in credit extension would depend on idle balances, but he incorrectly concludes that my case about the differential impact of reserve requirements on banks and intermediaries depends on idle balances. Rozen's error stems from his confusing a change in credit volume with a change in credit-granting activities (which he calls credit extension). I defined a change in the amount of credit an intermediary grants as a change in the turnover of its credit [1, p. 659], but, contrary to Rozen's interpretation, my conclusion about the differential impact of reserve requirements was explicitly stated in terms of the credit *volume* of banks and intermediaries [1, p. 660]. Hence, my conclusion is independent of the presence or absence of idle balances.

Rozen argues that, since banks can escape from the restrictions of a restrictive credit policy by activating idle funds, "the weaker impact of increased reserve requirements on intermediaries will not be very relevant" (p. 190). His point would be pertinent only if reserve requirements were eliminated entirely as a credit control device. In fact, his criticism is misplaced both because commercial banks are presently required to hold legal reserves and also because many people think we ought to consider extending legal reserves to the intermediaries as well. Under those circumstances, it is both important and decidedly relevant to investigate the forms which the reserves might take

short-term, highly liquid assets. Some (which Robinson calls Class II secondary reserves) "... may be materially longer, perhaps as long as a bank can afford for other reasons" [14, p. 86].

and to determine by advance analysis whether (as is widely assumed) the reserve requirements really would have the same impact on the credit volume of both banks and intermediaries.

Reduction in Earning Capacity. It is pertinent to recall the differential impact on credit volumes when Rozen notes that "reserve requirements might affect intermediary credit extension through a reduction in earning capacity" (p. 190). Once reserve requirements have been equalized in a system with a given total of reserves, this differential impact would determine (*ceteris paribus*) how any further increase in reserve requirements would affect the earning capacity of banks and intermediaries. As shown earlier, this difference could work more against the banks than against the intermediaries.⁸

III. Reactions to Excess Demand for Money

Shifts from Demand to Intermediary Deposits. I showed that a tight money period probably would not cause significant shifts from demand deposits to intermediary accounts because, contrary to what has been feared by others [5, p. 50], a tight money period probably would not raise very much the opportunity cost of holding demand deposits for those depositors who are sensitive to movements of the intermediary deposit rates. Rozen agrees about the shift but he rejects any role for opportunity costs on the grounds that (1) intermediary deposits are held by households (who are small savers) and households do not hold large cash balances; and (2) other holders of idle balances (i.e., nonhouseholds) do not want intermediary deposits at any time (p. 190). Although we need to know a lot more about these matters, it is clear that Rozen's criticism suffers from his failure to recognize the diversity among depositors. First, although most intermediary deposit accounts are held by small savers, a significant minority of accounts are held by large savers. A recent analysis of SLA depositors in two widely separated cities showed that 16 per cent of the number of SLA accounts was in the \$5,000-and-over bracket [16, p. 24]. Moreover, although the small savers predominated by numbers of accounts, the large depositors held a very large percentage of the total volume of share accounts.⁹ Second, as I look at it, Rozen's own figures dispute his contention that households do not hold large cash balances. He has stated that 29.7 per cent of total demand deposits in insured commercial banks were held by individuals as of January 25, 1961 (p. 190, n. 10). This is equal to \$32.4 billion [9, p. 405]. He has also noted that roughly half of the amount of all personal deposits of individuals are held in accounts of less than \$5,000 (p. 190) which, of course, also means that roughly half are held in accounts of more than \$5,000.¹⁰ As of January, 1961, this meant that approximately

⁸ For a fuller discussion of the comparative competitive relations between commercial banks and SLA, cf. [2, pp. 11-21].

⁹ Of the deposits in the sampled institutions, 63 per cent were held in accounts of \$5,000-and-over; almost 28 per cent in accounts of \$10,000-and-over [16, p. 24]. I am not aware of any comparable study for MSB but in a study of the Bowery Savings Bank as of the end of 1954, 20 per cent of the number of accounts were in accounts of \$5000-and-over and those depositors held 60 per cent of the total amount due to depositors [4, p. 56].

¹⁰ Actually about 45 per cent because 5.2 per cent of deposits were unclassified [8, p. 380].

\$14.5 billion was held in large accounts. The significance of this figure can be gauged from the fact that it is about twice as large as the total net increment to share accounts at SLA and more than ten times as great as the total net increment to MSB deposits in 1961 [9, p. 12]. And this is not all. The \$5,000 level is an arbitrary division of account size and a lot of the money which would be susceptible to an opportunity-cost shift is probably held by individuals with accounts in the less than \$5,000 category.¹¹ In this connection, it is pertinent that, although Rozen attempts to minimize the possibility of a shift between money balances and intermediary deposits, the Director of Research of the U.S. Savings and Loan League has stated that “. . . a considerable proportion of gross savings inflow is represented by marginal dollars, that is, *those that waver between pure thrift and the demand deposit category.*”¹² Finally, although households hold most of the intermediary deposit accounts, the intermediary deposits held by nonprofit organizations (e.g., labor unions, pension funds, etc.) are growing in importance and should not be ignored.¹³

Deposit Shifts and Rate Differences. We do not disagree about whether the rate difference¹⁴ is one of the important considerations in determining a saver's decision in placement of deposits; obviously it is. We disagree about how to interpret the role of the rate difference in the relative decline of TD.¹⁵ To illustrate, let us posit a demand curve for time deposits as a percentage of total savings deposits (TD, SLA, and MSB). Let the X-axis measure the per cent of total savings deposits that the public wishes to hold in the form of TD and let the Y-axis measure the rate difference in the absolute terms favored by Rozen. At any moment of time, a negatively-sloped curve would show the TD share for different hypothetical rate differences. For many years, the TD share of total savings has declined but since rate differences have been constant (and have even narrowed somewhat in recent years), the change cannot be due to a rate effect; at a given rate difference any decline in the commercial banks' share must have been due to a shift of the demand curve. Rozen's statement that “time was needed to gain public recognition and acceptance of the nonbank financial intermediaries” favors my position because this growing public acceptance of the intermediaries signifies a *change in depositor prefer-*

¹¹ Only 19 per cent of the amount of individuals' personal deposits are in accounts of less than \$1,000 [8, p. 380].

¹² Don M. Dailey [18, p. 47, stress added]. It is clear from the context that “gross savings inflow” refers to the inflow of funds into the SLA.

¹³ Time deposit accounts of nonprofit organizations have also been growing in commercial banks, and the Federal Reserve has urged the banks to show these accounts separately in bank records “in view of the growing financial importance of these organizations and the presumed volatility of these deposits, particularly in response to changes in relative yields among various outlets for short-term funds” [10, p. 540].

¹⁴ In stressing his rejection of the relative interest rate differences in favor of absolute differences, Rozen has injected a false issue into the discussion. I have already shown that my conclusion holds in terms of absolute as well as relative differences [2, p. 5]. Therefore, it is indifferent for my argument which difference is selected for discussion. To accommodate Rozen's preference, let it be the absolute difference.

¹⁵ My position is based on the fact that, between 1948-1955, the commercial bank time deposits grew less rapidly than the SLA in spite of a virtually constant absolute difference between those rates [2, p. 5].

ence patterns. This change has shifted the demand curve for TD to the left and brought about a decline of the commercial banks' share in spite of a constant (and even declining) absolute rate difference.¹⁶

Availability Effect. The availability effect involves a "shift from savings (*both time and intermediary*) deposits to demand deposits . . ." [1, p. 667, italics added]. Rozen does not deny that a business holder of commercial-bank time deposits might shift from TD to demand deposits but he dismisses the possibility that individuals who hold time deposits or intermediary deposits might make a similar shift. Rozen's criticism is mistaken because he fails to recognize the different motivation which might induce deposit shifts. He seems to be thinking only of shifts which would increase the idle funds held by individuals and wonders why an economic unit would forego the liquidity and return on savings deposits by shifting from savings deposits to demand deposits. He simply ignores the possibility that, if a restrictive credit policy deprived individuals of their usual sources of credit (or made the credit too costly), households might increase their cash balances in order to spend them. Once the *possibility* of a shift has been recognized, the question for credit policy is how to increase the *probability* that the public's reaction to an excess demand for money will take the form of a direct shift from intermediary deposits to demand deposits or of an indirect shift via purchase of securities.¹⁷ Either reaction by the public would cause the intermediaries to lose reserves and, in this indirect way could oblige them to conform to the requirements of a restrictive credit policy.

IV. Credit Control and Deposit Intermediaries

Ceiling Rates and Growth Rates. Rozen's argument that not much scope remains for product competition by nonbank intermediaries fails to recognize that eliminating the rate difference can of itself serve to expand the scope for product competition. For, ignoring the problems of the transition, a reduction in the dividend rate could enhance the resources available to the SLA for increased product competition.¹⁸ Deprived of a rate difference but reenforced with a large fund, the management of the SLA industry could intensify its competition for savings deposits by using this fund to absorb part of the cost of present services or to pay for new services.¹⁹

¹⁶ This does not preclude the possibility that rate differences might bring about a further relative decline of TD at some future time and I recognized this possibility in my paper [1, p. 666].

¹⁷ Even at the present time, some depositors use their savings deposits as a source of funds to buy securities. A survey by the U.S. Savings and Loan League of the purposes for which savers withdrew \$1,000 or more from their SLA accounts during January 1961 found that 22.2 per cent of the withdrawals were for the purchase of securities [17, p. 25, errata sheet for Table 13].

¹⁸ This is less true of the MSB.

¹⁹ Space limitations preclude a further discussion of this point. The interested reader can get an idea about the kind of competition that could substitute for the loss of a rate advantage from the following issues of the official publication of the U.S. Savings and Loan League [18]; October, 1956, pp. 49-50; February, 1957, p. 34; April, 1957, pp. 41-42; June, 1957, p. 40; February, 1958, p. 54; August, 1960, p. 41.

It is misleading if not wrong for Rozen to suggest that "the competitive position of commercial banks is likely to be improved" by a uniform rate ceiling set at the highest level of rates paid by any of the savings deposit institutions. A high ceiling could doubtless benefit various *individual* banks but, for reasons I have already explained [1, pp. 665, 669] (cf. also [3, p. 145] [21]), it would not significantly affect the position of the banking system as a whole.

Impairing Intermediary Liquidity. Rozen attempts to minimize the possibility that intermediary liquidity could be impaired indirectly by a shift from intermediary deposits to demand deposits. This merely repeats the point that has already been answered in Section III. With respect to a shift towards securities, Rozen finds my objective puzzling because he apparently did not realize that I was talking about securities supplied from Federal Reserve portfolios. He states that he can see no point in trying to encourage the shift because: "Although intermediary reserves might be restricted, the volume of credit would be unchanged" (p. 193). He goes on to argue that the shift would make sense only if the intermediary deposits were used to purchase Treasury securities which would otherwise have required an expansion of the money supply to enable the banks to hold those additional securities. Rozen errs on both points. The shift can be fully effective without reference to his alternative of an expanded money supply if the securities are provided from Federal Reserve portfolios, as I intended. At the same time, if the public paid for the securities by liquidating their intermediary deposit accounts, their action would force a reduction in the volume of intermediary credit and, in addition, a reduction in the volume of bank credit.

DAVID A. ALHADEFF*

REFERENCES

1. D. A. ALHADEFF, "Credit Controls and Financial Intermediaries," *Am. Econ. Rev.*, Sept. 1960, 50, 655-71.
2. — AND C. P. ALHADEFF, "The Struggle for Commercial Bank Savings," *Quart. Jour. Econ.*, Feb. 1958, 72, 1-22.
3. J. ASCHHEIM, *Techniques of Monetary Control*. Baltimore 1961.
4. J. I. BOGEN AND OTHERS, *Economic Study of Savings Banking in New York State*. New York 1956.
5. A. F. BURNS, *Prosperity Without Inflation*. Garden City 1958.
6. S. B. CHASE, JR., "The Lock-In Effect: Bank Reactions to Security Losses," *Monthly Review*, Federal Reserve Bank of Kansas City, June 1960, pp. 9-16. Reprinted in L. S. Ritter, *Money and Economic Activity*, 2nd ed., Boston 1961, pp. 171-77.
7. *Federal Reserve Bulletin*, April 1958.
8. —, April 1959.
9. —, April 1961.
10. —, May 1961.

*The author is professor of business administration at the University of California, Berkeley.

11. A. H. MELTZER AND G. VON DER LINDE, *A Study of the Dealer Market for Federal Government Securities*. Materials prepared for the Joint Economic Committee, 86th Cong., 2nd sess., Washington 1960.
12. NEW YORK CLEARING HOUSE ASSOCIATION, *Federal Reserve Reexamined*. New York 1953.
13. J. J. O'LEARY, "The Institutionalization of the Savings-Investment Process and Current Economic Theory," *Am. Econ. Rev., Proc.*, May 1954, 44, 455-70.
14. R. I. ROBINSON, *The Management of Bank Funds*. New York 1951.
15. W. L. SMITH, "Debt Management in the United States." Study Paper 19. Joint Economic Committee, 86th Cong., 2nd sess., Washington 1960.
16. U.S. SAVINGS AND LOAN LEAGUE, *Savings and Loan Fact Book*, 1960.
17. ———, *Savings and Loan Fact Book*, 1961.
18. ———, *Savings and Loan News*.
19. U.S. SENATE DOCUMENT no. 129, 81st Cong. 2nd sess., *Report of the Subcommittee on Monetary, Credit, and Fiscal Policies of the Joint Committee on the Economic Report*, Washington 1950.
20. U.S. SENATE, Report no. 1043, *Employment, Growth and Price Levels*, Joint Economic Committee, 86th Cong., 2nd sess., Washington 1960.
21. *Wall Street Journal*, January 11, 1960.
22. R. A. YOUNG AND C. A. YAGER, "The Economics of 'Bills Preferably,'" *Quart. Jour. Econ.*, Aug. 1960, 74, pp. 341-73.

Variability in Earnings-Price Ratios: Comment

The analysis of earnings-price ratios by Haskel Benishay [1] in a recent issue of this *Review* is of interest in so far as it provides information on the variation in the cost of capital among corporations. The concept of the cost of capital has been the subject of considerable theoretical controversy, and there is a great need for empirical research to improve the factual basis of our knowledge on the subject. It is therefore most unfortunate that the errors committed by Benishay both in formulating his model and in interpreting his findings are so numerous and serious that his results probably do more to confuse than clarify the issues.

It will be useful to begin with a brief statement of the theoretical background for the paper. According to neoclassical theory, when the future is known with certainty a firm increases its value by undertaking any investment with a rate of profit greater than the rate of interest. Those who accept the theory, let us call them capital theorists, consider problems of finance such as the determination of a corporation's optimum dividend rate nonsense problems. Under neoclassical theory, the value of a firm is independent of the way in which it is financed.

In contrast with the capital theorists, financial analysts *observe* that corporations do not use the rate of interest as the cost of capital¹ and that cor-

¹ The cost of capital is the rate of return a firm requires as a condition for undertaking an investment. It is widely accepted that the objective of the firm is the maximization

porations are very much concerned with financial policy—debt-equity ratio, dividend rate, etc. Their observations have persuaded many of them that the conclusions arrived at by means of neoclassical theory for a world of certainty are not valid when it is recognized that the future is uncertain and investors may have an aversion to risk.

The purpose of a recent paper by Modigliani and Miller [6] was to bridge the gulf between the capital theorists and the financial analysts. Their argument may be summarized as follows: Under uncertainty a corporation's cost of capital is not the rate of interest, but the corporation's earnings plus interest paid divided by the market value of its securities (equity plus debt). The cost of capital may vary among corporations in accordance with differences in their intrinsic riskiness. However, the method of finance remains of no consequence: A corporation maximizes its value by undertaking every investment with a rate of profit in excess of its cost of capital as defined above, independently of the method of finance employed. In particular, dividend and leverage policy have no influence on the value of a corporation.

Although Benishay did not explicitly address himself to the Modigliani-Miller paper, the question he tackled may be stated as follows: Does the explanation of the considerable variation in earnings yield (earnings-price ratio) among corporations support the Modigliani-Miller theory?² Benishay classified his independent variables as "corrective" and "risk" variables. Risk variables were included because a corporation's earnings yield may be expected to vary with leverage, earnings instability, and other risk attributes of a share. The corrective variables have the following rationale: If a share has a price of \$50 and current earnings of \$10, the *measured* yield on the share is .20. The *true* yield on the share is also .20 if the expected earnings in each future period are also \$10.³ However, if the expected earnings are only \$5 per period, the true yield is only .10, although the measured yield is .20. The dependent variable can only be a measured yield, and the purpose of the cor-

of its value (i.e., the value of the existing ownership equity). In this event the cost of capital is a rate of return such that any investment with a higher rate raises the value of the firm and vice versa. It is evident that under neoclassical theory a firm takes the rate of interest as its cost of capital.

² There is no difficulty in the fact that the Modigliani-Miller ratio includes interest in the numerator and debt in the denominator, what might be called the gross or leverage free earnings yield. Under their theory a simple linear relation holds between their ratio and the earnings-price ratio. Let y = earnings-price ratio, q = ratio of earnings plus interest to equity plus debt, h = leverage ratio, and i = rate of interest. Under the celebrated Modigliani-Miller theorem q is independent of h , and

$$y = q + h(q - i)$$

Hence, y varies with h and it varies in the same manner as q with every other variable. It is also true that, under their theory, a corporation's cost of capital is equal to q . That is, a corporation increases the market value of the existing ownership equity by undertaking every investment with a rate of return greater than its value for q , regardless of the method of finance employed.

³ By true yield I mean the rate of discount that equates the future earnings stockholders expect with the price of a share. Benishay refers to this quantity as "the theoretical concept of a rate of return on equity capital" [1, p. 81].

rective variables is to account for the variation in measured yield that does not represent variation in true yield (the significant economic variable) among shares. The introduction of corrective variables is the main contribution of the paper, and they will be our primary concern.

Since a corporation's earnings are subject to wide year-to-year fluctuations, the earnings in any one year may not represent what investors believe the corporation is able to earn. For this reason Benishay uses as his dependent variable, y , a weighted average of the corporation's earnings for the nine years up to and including the cross-section year⁴ divided by the market value of the equity outstanding in the cross-section year. His first corrective variable X_1 is the rate of growth in earnings over the nine-year period up to and including the cross-section year. It is included because the averaging process for obtaining y biases its value downward for a corporation with a trend rate of growth in earnings. The second corrective variable, X_2 is the rate of growth in the market value of the common equity over the nine years. If expected earnings have been recently re-evaluated, the measured yield will be in error as an estimate of the true yield. X_2 is introduced on the grounds that the re-evaluation of expected earnings will be correlated with the rate of growth in the value of the stock. Hence, X_2 is a means of discovering error in the measured yield. Benishay found no correlation between y and X_1 . There was statistically significant correlation with X_2 , but his rationale for this finding is open to question.

The third corrective variable, X_3 , is the log of the average dividend pay-out rate for the three years up to and including the cross-section year. There was statistically significant inverse correlation between y and X_3 , and I judge that X_3 contributed most to explaining the variation in y among the corporations. Inverse correlation between earnings yield and dividend pay-out rate is usually interpreted as evidence against the Modigliani-Miller theory. Their position is that a rise in the dividend with earnings given should leave share price unchanged.⁵ The opposite view that the dividend rate has an influence on price and earnings yield has wide acceptance in financial circles on pragmatic grounds, and has been investigated theoretically in my writings [4] [5].

Benishay acknowledges the existence of this position with the statement, "A notion seems to prevail in the financial literature, that because investors prefer distribution to retention of earnings, the pay-out ratio and the rate of return are negatively correlated" [1, p. 83]. However, he finds no substance in this notion. He attributes the correlation between earnings yield and pay-out rate to "... the effect of errors in the measurement of earnings. If measured earnings are an overestimate and dividends are a stable proportion of

⁴ Using a large sample of corporations Benishay ran cross-section regressions of y on the corrective and risk variables for the years 1954-57.

⁵ More exactly, they maintain that price should rise (fall) if the rate of return on the investment financed by a reduction in the dividend is above (below) q . However, this would not cause inverse correlation between payout rate and earnings yield. If anything, the comparatively favorable tax treatment accorded capital gains and the likelihood that corporations with high rates of return on investment have lower pay-out rates would lead one to expect positive correlation between pay-out rate and earnings yield.

expected income; the rate of return is 'too high' and the pay-out ratio 'too low.' This will introduce into the relationship a negative spurious correlation" [1, pp. 83-84]. The Modigliani-Miller [7, pp. 666-68] statement of what I (and also Benishay) believe is the same position is that corporations pay a stable fraction of *expected* income in dividends. Actual income fluctuates considerably and is a poor estimate of expected income, so that correlation of stock price with dividends is due to the "informational content of dividends" with respect to expected income.

This interpretation by Benishay of the correlation he found between earnings yield and pay-out rate is, to put it mildly, not convincing. He took great pains to deal with the problem of earnings measurement without reference to the dividend rate. Recall, y is based not on current earnings but on a weighted average of earnings, and two corrective variables other than the pay-out rate are used to further correct for the difference between actual and expected earnings. Yet Benishay still found it necessary to introduce the pay-out rate.⁶

Returning to the other corrective variables, X_1 and X_2 , closer examination reveals that even within the framework of his theoretical preconceptions Benishay's model is a seriously defective instrument for realizing his objective—explaining the variation in yield among common stocks. Assume a sample of corporations with the following attributes: (1) All corporations have no debt and have the same leverage-free riskiness. This eliminates the need for the risk variables. (2) The Modigliani-Miller theorem that the earnings yield is independent of the pay-out rate holds true. This eliminates the need for X_3 . (3) Finally, the amount each corporation is expected to earn on its existing capital can be observed free of error. This eliminates the need for X_1 and X_2 . Under these assumptions y^* , the true yield, is the same for all corporations in the sample. According to Benishay, the measured yield, y , should also be the same for all corporations. In fact, with y^* the same, y would vary among the corporations in the sample. As Bodenhorn [2] has shown and Modigliani and Miller [7, pp. 662-63] recognized independently, all corporations will have the same y only if each has a rate of return on new investment, r , that is equal to y^* .⁷

⁶ When Modigliani and Miller advanced the informational content explanation of correlation with the pay-out rate, what they seemed to have in mind were situations where current income alone was used in the model. One wonders at the implications of the argument when it is used without proper caution. For instance, one might imagine a financial analyst would respond as follows when called upon to advise a corporation that is considering a reduction in the dividend to finance investment: "You need have no fear a reduction in the dividend will depress the price of your stock. What you must keep in mind, however, is that investors believe you pay a stable fraction of expected income in dividends. Therefore, the informational content of the dividend reduction will lead investors to believe your expected income will decline. Of course the price of your stock will fall but this will be due not to the dividend reduction but to its informational content."

⁷ A corporation will have $y = y^*$ if $r = y^*$, because it has no leverage. The more general condition is that $r = q^*$, where q^* is a firm's true cost of capital. (Since measured and true earnings yield may differ, q and q^* may differ.) With zero leverage $y^* = q^*$. With leverage varying y^* will vary among the corporations in the sample, but q^* will not. The value of y^* for each is $y^* = q^* + h(q^* - i)$. If $r = q^*$, for all corporations, they all will have the same $q = q^*$, and for each y will be equal to the value of y^* given

With $r = y^*$ the earnings generated by investment will just cover the cost of the funds provided and leave the expected earnings on the existing capital unchanged. By contrast with $r > y^*$ a return of r will be earned on investment and a return of y^* will be paid for the funds provided. The excess will accrue to the existing stockholders, and investors will expect the earnings on the existing equity to increase over time. The price at which the stock will sell in relation to current earnings will thereby be raised. In other words, with y^* the true yield, the observed yield will be $y < y^*$. Therefore, a corrective variable Benishay should have used is $q(r - y^*)$ where q is the investment rate.

It may appear that the two corrective variables X_1 and X_2 have some similarity with the variable just proposed. However, they differ in important respects from $q(r - y^*)$. As to X_1 , I have shown elsewhere [4] that the rate at which a corporation's income grows is roughly equal to the product of its rate of profit on investment and b , its retention rate. Hence $rb \sim X_1$. Assume a corporation with $r = y^*$ has been retaining and investing a large fraction of its income. X_1 will be large, but for this corporation no correction should be made in y as a measure of y^* . By contrast another corporation with $r > y^*$ may have a low b and use other sources of funds to finance investment. For this corporation y will seriously underestimate y^* , and a large correction is needed. However, X_1 will be lower than the value for the previous corporation.⁸ It is evident that X_2 is no better than X_1 as a corrector for error in the measured yield due to differences between a corporation's cost of capital and the profitability of its investment opportunities.

The reason that Benishay offered for the statistically significant correlation between y and X_2 is most unimpressive. Inverse correlation between y (earnings divided by price) and rate of growth in price is almost inevitable, and it could arise for a number of reasons, among which a recent re-evaluation of expected income is only one. For instance, assume that confidence in expected earnings has recently changed in varying amounts for the corporations in the sample. For corporations in which there was a rise in confidence the share price would rise and *both* measured and true yield would decline. The result would be inverse correlation between y and X_2 , but under this cause for the correlation there would be no error in y as an estimate of y^* for a corporation. In contrast, Benishay would have someone interested in the value of y^* for a corporation use X_2 to correct the measured yield.

Benishay's model contained four risk variables, and all but the last can be dealt with quite briefly. X_4 , income stability, is the mean of earnings for the nine years divided by the standard deviation of earnings around its trend. There was no correlation between y and X_4 . Aversion to risk and the use

by its leverage rate. Note that we are here accepting the assumptions of the Modigliani-Miller theory under which q^* is a corporation's cost of capital. Also, by assuming no leverage we may continue to refer to y^* as the cost of capital.

⁸ The absence of correlation between y and X_1 that Benishay found may possibly be explained as follows: There is positive correlation between y and b , and there probably also is an inverse correlation between y and r . The result will be no correlation between y and rb , and $rb \sim X_1$.

of variability in past earnings to measure risk are widely accepted. It would therefore seem likely that the lack of correlation reflects on Benishay's model and/or his measurement rules. X_5 , equity stability, is analogous to X_4 with equity value substituted for earnings. We would expect y and X_5 to be negatively correlated, but the data produced positive correlation. Benishay interpreted this result as evidence that investors have a preference for price fluctuations due to their speculative urge.⁹ X_6 , a corporate-size variable, showed significant inverse correlation with y . This finding is the only significant correlation for which he could provide a plausible explanation.

Benishay's last variable was the debt-equity ratio. X_7 proved to be inversely correlated with y , and in explaining this result Benishay provided another strange piece of reasoning. He stated that the "debt-equity ratio can be interpreted in two ways: (1) if it represents deviations from its equilibrium value, then it ought to be positively associated with the rate of return. (2) If it were to be measured at its equilibrium level it ought to be negatively correlated with the rate of return, since then it becomes a measure of safety" [1, p. 92]. What does Benishay mean by equilibrium value? If his dependent variable had been ρ , earnings before interest divided by equity plus debt, then under Durand's [3] theory one could talk about an equilibrium leverage ratio, the one that maximizes share price. Under the Modigliani-Miller theory there is no such thing as an equilibrium value. However, Benishay's dependent variable was y and not ρ and everyone including the writers just mentioned agree that a corporation's earnings yield increases with its leverage. His finding of inverse correlation between y and leverage is contrary to generally accepted theory.

Benishay's "measure of safety" explanation for the correlation may be stated more clearly as follows. The other risk variables did a poor job of accounting for the variation in the leverage-free risk among corporations, and the corrective variables did a poor job of accounting for $q(r - y^*)$. Since secure profitable corporations are likely to borrow more than unstable unprofitable ones, the correlation between y and X_7 is due to the variation among corporations in stability and profitability and not the variation in leverage, other things the same. In short the results further demonstrate that the measurement of the other variables was unsatisfactory, and one cannot infer that an increase in leverage reduces the earnings yield at which a share will sell.

Smoothing past earnings and using corrective variables are promising lines of attack in the analysis of variation in earnings yield among shares. However, Benishay's choice of variables and his explanation of the findings were most unfortunate.

MYRON J. GORDON*

* A more reasonable explanation is that the period used to obtain X_5 for each corporation was one in which the trend in share prices was upward. The shares that rose the most are those that would have small values for y . The shares that changed in price the most (rose in this period) probably also had the greatest fluctuations around their trend values in relation to their mean price over the period, i.e., the highest values for X_5 .

* The author is associate professor of industrial management, School of Industrial Management, Massachusetts Institute of Technology.

REFERENCES

1. HASKEL BENISHAY, "Variability in Earnings-Price Ratios of Corporate Equities," *Am. Econ. Rev.*, March 1961, 51, 81-94.
2. DIRAN BODENHORN, "On the Problem of Capital Budgeting," *Jour. Finance*, Dec. 1959, 14, 473-92.
3. DAVID DURAND, "The Cost of Capital, Corporation Finance, and the Theory of Investment: Comment," *Am. Econ. Rev.*, Sept. 1959, 49, 639-54.
4. M. J. GORDON, "The Optimum Dividend Rate," presented at the Cambridge, Massachusetts meetings of the Econometric Society, August 27, 1958. Published in *Management Sciences: Models and Techniques, Proceedings of the Sixth International Meeting, Institute of Management Sciences*, Vol. 1, London 1960, pp. 92-106.
5. —, "The Savings Investment and Valuation of a Corporation," *Rev. Econ. Stat.*, Feb. 1962, 44.
6. FRANCO MODIGLIANI AND M. H. MILLER, "The Cost of Capital, Corporation Finance and the Theory of Investment," *Am. Econ. Rev.*, June 1958, 48, 261-97.
7. —, "The Cost of Capital, Corporation Finance and the Theory of Investment: Reply," *Am. Econ. Rev.*, Sept. 1959, 49, 655-69.

Variability in Earnings-Price Ratios: Reply

Gordon's primary criticism is directed at my interpretation of the regression performance of the pay-out ratio variable. In my work I have ascribed the negative relation between the pay-out ratio and the measured rate of return on equity (earnings-price ratio) to errors in the measurement of earnings. In several articles [3] [4] [5] [6], all variations on the same theme, Gordon has ascribed this relation to market preference for dividends.¹ Apparently he believes that my explanation has no merit either in the context of my research or in the context of his own work, and that his explanation remains unimpaired. Gordon's secondary criticism is aimed at the choice of other independent variables included in my model in the apparent belief that their alleged defectiveness lends additional support to his main criticism. In so doing he fails to realize that if he were correct in his view that the other variables were erroneously included, the negative empirical relation between the pay-out ratio and the earnings-price ratio would become even more doubtful, lending less rather than more support to his main argument.

In this note I shall first attempt to demonstrate the merit of the errors-of-measurement explanation. I shall then deal with his criticism of my use of variables other than the pay-out ratio.

I. The Errors-in-Measurement Explanation

I believe that even a weighted average of past book earnings will diverge from expected income and that consequently the pay-out ratio coefficients will be negatively biased. The divergence between a mean of past book earnings

¹ He presents another rather mechanical explanation which we shall not examine.

and expected income will consist of three components constituting together a sizable proportion of expected income: (1) the difference between the mean of book earnings derived from the time-series sample and its expected value; (2) the misrepresentation of actual earnings by book earnings; (3) the difference between actual earnings and expected income. In order to assess the resulting bias in the pay-out ratio coefficients we shall trace the error effects in a simple linear regression of the log of the earnings-price ratio on the log of the payout ratio.² We shall establish the existence of the downward bias of the pay-out ratio coefficients and try to ascertain its order of magnitude.

Let the error in the measurement of earnings be $1 - V$, so that measured earnings equals expected income times V ; measured earnings has no error when V equals 1. Our regression can be written: $\log [(\text{expected income}) V / \text{equity}]$ on $\log [\text{dividends} / (\text{expected income}) V]$ or $[\log (\text{expected income}) + \log V - \log (\text{equity})]$ on $[\log (\text{dividends}) - \log (\text{expected income}) - \log V]$.

Let: the log of the true rate of return be y . Hence $\log (\text{expected income}) - \log (\text{equity}) = y$. Let $\log V$ be z ; log of measured rate be $(y + z)$. Let log of true pay-out ratio be x ; so that $\log (\text{dividends}) - \log (\text{expected income}) = x$. Let log of measured pay-out ratio be $(x - z)$. And let z be independent of y and x . Then:

$$B_{(y+z)(x-z)} = M_{(y+z)(x-z)} / M_{(x-z)(x-z)}$$

where $B_{(y+z)(x-z)}$ is the population regression coefficient of the measured rate of return on the measured pay-out ratio expressed as a ratio of the appropriate moments; and

$$B_{yx} = M_{yx} / M_{xx}$$

is the corresponding population regression coefficient of the true rate of return on true pay-out ratio.

We would like to trace the effect of the measurement error upon $B_{(y+z)(x-z)}$, when $B_{yx} = 0$, when there is no correlation except due to error.

$$(1a) \quad M_{(y+z)(x-z)} = M_{yx} + M_{z(y-x)} - M_{zx}$$

but since $M_{z(y-x)} = 0$

$$(1b) \quad M_{(y+z)(x-z)} = M_{yx} - M_{zx}$$

Consequently

$$(1c) \quad M_{yx} = M_{(y+z)(x-z)} + M_{zx}$$

also

$$(2a) \quad M_{(x-z)(x-z)} = M_{xx} - 2M_{zx} + M_{zz};$$

but since $M_{zx} = 0$

$$(2b) \quad M_{(x-z)(x-z)} = M_{xx} + M_{zz}$$

and consequently

$$(2c) \quad M_{xx} = M_{(x-z)(x-z)} - M_{zz}$$

² We shall assume that all relevant variables except for the error are constant.

Therefore

$$(3) \quad B_{yx} = M_{(y+z)(x-z)} + M_{zz}/M_{(x-z)(x-z)} - M_{zz}$$

If $B_{yx}=0$ (as I believe), then $M_{(y+z)(x-z)} = -M_{zz}$, and therefore we would expect:

$$(4) \quad B_{(y+z)(x-z)} = -M_{zz}/M_{(x-z)(x-z)}.$$

Stated verbally we would expect a negative coefficient, even when B_{yx} , the true regression coefficient, equals zero.

Having established the existence of the downward bias of the pay-out ratio coefficient I shall try to ascertain its order of magnitude. My work provides an estimate of $M_{(x-z)(x-z)}$, the denominator of expression (4), equal to .015. If we assume that the error $1 - V$ equals $-.25$ and $+.21$, then z will be plus or minus .1; M_{zz} in expression (4) will equal .01 and consequently the measured regression coefficient $B_{(y+z)(x-z)}$ would equal $(-.010/.015) = -.66$. In a similar fashion, if the error $(1 - V)$ averages about ± 13 per cent the measured regression coefficient would inevitably be about $-.30$.³ Therefore, if errors of the magnitudes considered are acknowledged to be associated with the measurement of expected income, negative correlations between the pay-out ratio and the earnings yield will be spurious.

II. Other Criticism

1. Gordon provides what he believes is a proof of the "defectiveness" of my model. He criticizes my use of X_1 and X_2 to correct measured income and mistakenly contends that he has an alternative and a better way to correct for the error. He presents a model based on the assumptions that: (1) corporations have no debt; (2) the earnings yield is independent of the pay-out ratio; (3) earnings expected on existing equity is measured without error, and known with certainty. He proceeds to obviate his third assumption by implicitly assuming that corporations' expected rate of return on new investment, r , is unknown which renders earnings expected on existing equity only partially known. He concludes that income expected on existing equity is an increasing function of r . He further concludes that the error of measuring expected income is $q(r - y^*)$ where q is the investment rate and y^* is the true rate of return on existing equity. He does not specify how, y^* , which was implicitly assumed known, as well as r and q are to be determined empirically. He does not realize that in my work I have tackled precisely this empirical problem by using X_1 and X_2 .⁴ He does not apprehend that by acknowledging the existence of errors of measurement of earnings he actually acknowledges

³ Assessing the order of magnitude of the bias on the basis of assumptions about the order of magnitude of the error was suggested to me in the context of another empirical investigation by Lawrence Fisher.

⁴ Recall that y^* = expected income on existing equity/market value; r = expected income on new investment/cost of new investment; q = investment rate. In order to know y^* one must measure expected income on existing equity without error. Gordon has not suggested how. In order to correct y^* it is necessary to measure r without error. Again Gordon has not suggested how. Therefore, presenting $q(r - y^*)$ as a corrector for y^* where both r and y^* are unknown constitutes no solution to the problem of correcting y^* .

a spurious negative correlation between the pay-out ratio and the earnings yield even when the earnings yield is independent of the pay-out ratio. Furthermore, he does not grasp that if X_1 and X_2 were in fact doing a poor job of correction, the expected spurious correlation between the pay-out ratio and the earnings yield would be even higher.

Gordon criticizes in more detail my growth in earnings variable, X_1 . He considers two companies one with the rate of return on new investment, r , equal to the rate of return on existing equity, y^* , the other with $r > y^*$. He artificially assumes that the retention rate, b , is sufficiently lower for the second company to render its rb smaller than rb of the first, and wrongly concludes that in the case of the second company, X_1 will not correct properly. He forgets however that X_1 measures growth from *any* source, not necessarily from retained earnings. If r for the second firm is high the level of new investment will be high. Retained earnings and/or external funds will be used by the firm to take advantage of the opportunity afforded by a high r and their *combined* influence will be measured in X_1 .

But another and more important point must be made in this connection. It is *expected* growth which we aim to measure in X_1 and *past* growth which we actually measure. And only if past and expected growth in earnings are correlated to an appreciable degree, will X_1 accomplish its task as a corrector. My results suggest that the two are correlated but not to an appreciable extent.

2. Gordon argues that my explanation (shifts in expected income) of the negative correlation between the earnings-price ratio and growth in equity is not the only possible one: He maintains that possible changes in the earnings yields of companies in my cross-section can serve instead as an explanation. I considered this alternative before excluding X_2 in my model and discounted it because I felt that its actual contribution was negligible: changes in prices of shares of stock are generally caused by shifts in expected income not by changes in earnings yields, or put differently, true earnings yields are far more stable through time than expected income.

3. Gordon maintains that since "aversion to risk and the use of variability in past earnings are widely accepted" (pp. 207-8) stability in earnings, X_4 , and the earnings yield should have been, but in fact are not, correlated in my work. Recall that the partial regression coefficient of X_4 in my work is consistently negative in all four cross-sections (t ratios: 1.50; 1.55; 1.74; 1.01), and that this supports rather than contradicts the hypothesis of preference for earnings stability; also the fact that the error element in measured earnings, from which X_4 is computed is great, renders X_4 inaccurate and reduces its coefficients.

4. Gordon expects equity stability, X_5 , to be negatively correlated with the earnings yield for the same reasons that he would expect a negative correlation between earnings' stability, X_4 , and the earnings yield. But the two concepts of stability are distinctly different although common elements make them positively correlated. Consequently, there may be an aversion to equity stability even though earnings stability is preferred.

A considerable amount of the total outstanding equity is held and traded by

individuals who are in higher income brackets and/or have a high ratio of nonhuman to human capital. These individuals will tend to be less fearful of equity volatility, because of their easier access to cheaper borrowing in emergencies, and could be more inclined toward speculation; consequently they may prefer volatile equities. If the supply of variable-price stocks is limited in relation to the number of individuals in the market who are willing to buy them at prices which are *ceteris paribus* higher than those of stable-price stocks, then equilibrium prices of variable-price stocks will be higher than those of stable-price stocks. As a consequence of the preceding considerations, I see no a priori reason to believe that ascribing the positive correlation between equity stability and earnings yield to a net market aversion to stable equities is ill-founded. I believe that my interpretation is reasonable.

5. Gordon claims that my findings of inverse correlation between the earnings yield and the debt-equity ratio is contrary to generally accepted theory and attributes to me the inference that an increase in a firm's leverage reduces the firm's earnings yield. Gordon's conclusions are erroneous for two reasons:

a. He ignores the fact that firms in my study belong to several industries having varying risks and that no measure of industry risk (coefficient of variation of equity earnings plus interest) is included in my regressions. Consequently, he fails to note that in the context of my study debt-equity is in fact a measure of safety, not of risk, and should not be expected to be positively associated with earnings yield. He also fails to recognize that my interpretation is not at variance with the theory that in an individual firm the earnings yield increases with leverage.

b. Gordon ignores the complementary explanation provided by my article, that in the context of my study the debt-equity ratio is a measure of size and, as such, a measure of safety.

6. The following statement in my article explains why the debt-equity ratio is a measure of size: "In the multiple regression, X_6 , equity value, is entered along with the debt-equity ratio as an independent variable. Therefore, the regression relationship of the debt-equity ratio with the measured rate of return is determined while holding equity value constant, which in turn may make the debt-equity ratio in the context of this study a measure of size and thus account for the negative relationship with the dependent variable" [1, p. 92]. If another variable, debt plus equity, were included in the regression along with the debt-equity ratio the coefficients of the latter might have changed signs.

7. Gordon questions my use of the concept of equilibrium debt-equity ratio to explain the inverse correlation between debt-equity ratio and earnings yield. My assumptions and their implications are presented below.

a. In my framework, as in Durand's [2, p. 644], the debt-equity ratio of a firm in a given "risk equivalent class" [7, p. 265] is not independent of the risk attributed to that class. Specifically:⁵ firms belonging to a higher risk class, a class whose coefficient of variation of earnings plus interest is higher, will

⁵ It is independent in Modigliani and Miller's [7, p. 278] framework.

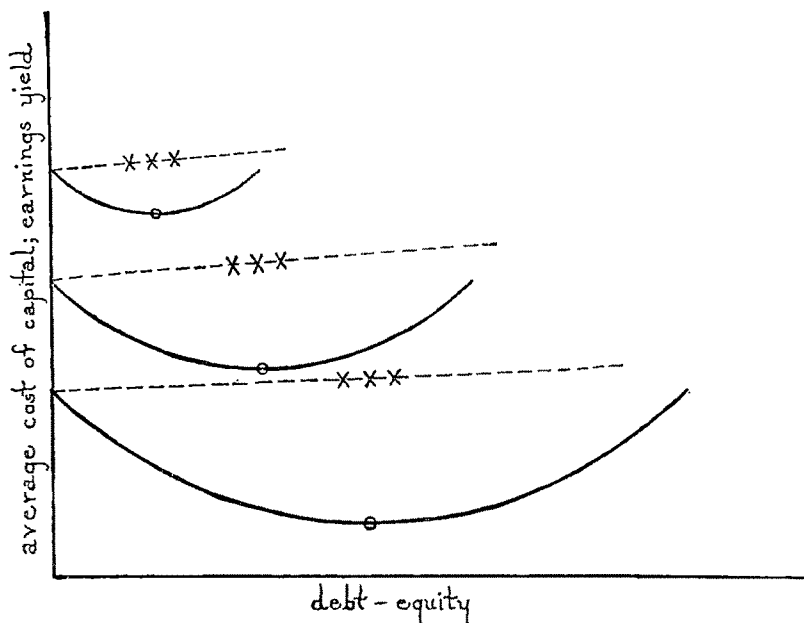


FIGURE 1

tend to have lower optimum debt-equity ratios at which share prices are maximized.⁶

b. We agree that within a risk-equivalent class the earnings yield is equal to the average cost of capital when the debt-equity ratio equals zero, and that it increases uniformly as the debt-equity ratio rises.

c. It is also commonly agreed that in a cross-section of firms from several risk-equivalent classes (industries) the cost of capital and the earnings yield are positively associated and that each is in turn positively associated with

⁶I believe that Modigliani and Miller's conclusion, that there is no optimum leverage, results from the fact that they dismiss two important factors [7, p. 274]: (1) the possibility that corporations are able to borrow at rates lower than individuals; (2) the effect of the probability of bankruptcy loss and the fact that this probability rises faster with an increase in debt-equity of firms with a higher coefficient of variation of earnings plus interest.

In their disclaimer of the optimum leverage view [7, p. 283] Modigliani and Miller present scatter diagrams of oils and utilities relating the average cost of capital (earnings plus interest divided by market value of equity and debt) to the debt/debt-plus-equity ratio. The optimum-leverage claim is borne out by interindustry comparison of the very data which appear to lend it no support on the basis of intraindustry comparison. Although no relationship is discernible in each scatter diagram, a negative and a significant relationship emerges when the two scatter diagrams are pooled; the higher is the cost of capital the lower is the debt/debt-plus-equity ratio. The ratio of debt to debt-plus-equity is consistently lower for the oils whose earnings plus interest are more variable, higher for the utilities whose earnings plus interest are less variable; its median for oils is about half of its median for utilities; its ranges for the two industries hardly overlap. Clearly firms belonging to a higher risk class tend to have lower debt-equity ratios.

the coefficient of variation of earnings plus interest for the class, i.e., with risk for the class.⁷

If the three preceding propositions are accepted, two conclusions follow: (1) The debt-equity ratio is negatively associated with the earnings yield in a cross-section of firms from several industries as shown in Figure 1. Dotted lines represent the earnings-yield schedules, solid lines the average cost of capital schedules for the various risk classes. The *o*'s represent optima. The *x*'s are actual observations of firms' debt-equity ratios and their respective earnings yields.

(2) In a cross section of firms from several industries the deviation of a firm's debt-equity ratio from the optimum debt-equity ratio of the firm's class (*d* in Figure 2), will be positively associated with the difference between a firm's actual earnings yield and the earnings yield for an unlevered firm in the firm's risk class (*y* Figure 2).

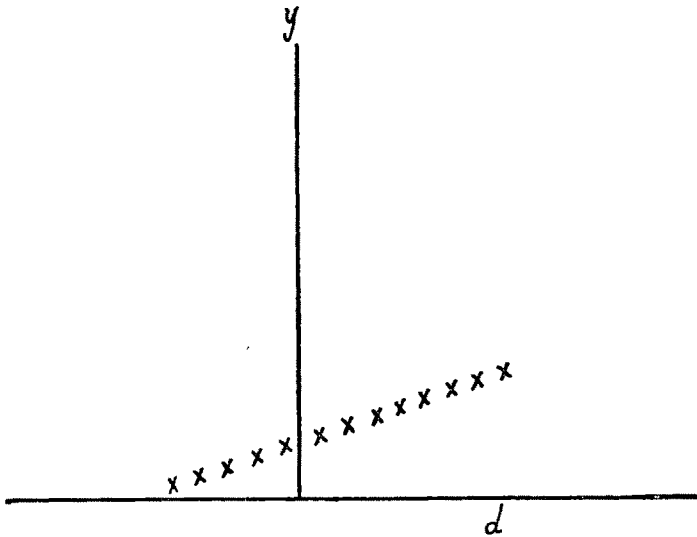


FIGURE 2

Conclusion (1) will apply to empirical results in a regression of the earnings yield on the debt-equity ratio where the coefficient of variation of earnings plus interest is not included and is thereby not held constant. Conclusion (2) will apply to empirical results in a regression of earnings yield on debt-equity where the coefficient of variation of earnings plus interest is included and is thereby held constant.

The firms in my cross-section are from several industries and the coefficient of variation of earnings plus interest is *not* included in the regression; therefore Conclusion (1) applies: a negative association between earnings yield and the debt-equity ratio is to be expected since the debt-equity ratio has

⁷ Risk is usually defined in terms of the coefficient of variation of earning plus interest.

come to represent safety and the earnings yield includes a premium for the risk of the class.

It is hoped that this discussion in conjunction with Gordon's comment will foster an awareness of the difficulties involved in utilizing to advantage a multiple regression analysis of variables measured with error.

HASKEL BENISHAY*

REFERENCES

1. HASKEL BENISHAY, "Variability in Earnings-Price Ratios," *Am. Econ. Rev.*, March 1961, 51, 81-94.
2. DAVID DURAND, "The Cost of Capital, Corporate Finance, and the Theory of Investment: Comment," *Am. Econ. Rev.*, Sept. 1959, 49, 639-54.
3. M. J. GORDON AND E. SHAPIRO, "Capital Equipment Analysis: The Required Rate of Profit," *Management Sci.*, Oct. 1956, 3, 102-10.
4. M. J. GORDON, "The Optimum Dividend Rate" in *Management Sciences: Proceedings of the Sixth International Meeting of the Institute of Management Sciences*, Vol. 1, London 1960, pp. 92-106.
5. —, "Dividends, Earnings, and Stock Prices," *Rev. Econ. Stat.*, May 1959, 41, 99-105.
6. —, "The Savings Investment and Valuation of a Corporation," *Rev. Econ. Stat.*, Feb. 1962, 44.
7. FRANCO MODIGLIANI AND M. H. MILLER, "The Cost of Capital, Corporate Finance and the Theory of Investment," *Am. Econ. Rev.*, June 1958, 48, 261-97.

* The author is an assistant professor of economics and finance at Roosevelt University.

BOOK REVIEWS

General Economics; Methodology

Ocherki po sovremennoy sovyetskoy i zarubezhnoy ekonomike, Sbornik statey, Vypusk 1 (Essays on Contemporary Soviet and Foreign Economics—A Collection of Articles, 1st issue). Edited by N. M. OZNOBINA. MOSCOW: Gosplan Publishing House, 1960. Pp. 307. 97 Kopecks.

This miscellany is the work of the young economists on the staff of the Scientific Economic Research Institute of the State Economic Council of the USSR. Most of the chapters are devoted to planning problems which were raised at the 21st meeting of the USSR Communist Party and the July 1960 Plenary Session of the Party Central Committee.

The collection is highly readable, and the application of statistics and mathematics to economics is reminiscent of *Econometrica* in its salad days of the 1930's before the lemma specialists took over. Some articles are stimulating while others belabor the obvious, and all but the last two are well worth reading. The small press run (only 5,500 copies) is surprising.

The lead article by A. I. Anchishkin and B. P. Plishevsky describes a method of recomputing national income and product in prices that approximate costs. The authors feel that certain costs are not reflected in prices because of what I translate as "peculiarities in the present system of price determination." They also show a healthy concern for the relationships between income, consumption, and savings, between sectors, and between industries. They conclude *inter alia* that more study of the pricing system is needed to see what can be done to improve it.

V. P. Zhivin and A. I. Klinsky write on coefficients of "total expenditure" (i.e., direct inputs of raw materials plus indirect raw material inputs in the form of finished products) and the interindustry input-output balance. Unlike the coefficient of direct input of raw materials (norm), the coefficient of total input varies with changes in structure of the industries in question and with the changing nature of interindustry relationships. The use of input-output matrices is presented as a way to get more realistic input coefficients (with electronic computers) and to use less planning manpower.

F. N. Klotstvov's input-output analysis is applied to the problem of working out a planned interindustry balance. He is looking for a better expression of the relationship between production, consumption, and investment because the existing system of norms is not sufficiently responsive.

The remaining articles on the Soviet economy are of a somewhat narrower scope. K. G. Said-Galtsev considers a new classification of "basic funds" (i.e., capital) which takes recent economic changes and technological progress into account and makes possible the computation of more realistic depreciation schedules. T. K. Popova proposes a variety of significant ratios to analyze the regional distribution of the labor force. A. E. Zholkevich discusses pro-

duction indicators for the iron and steel industry, and E. B. Lukyanov appraises the economic efficiency of its development in Siberia and Kazakhstan.

Yu. M. Kogan studies the potentialities of natural gas as a fuel for thermal electric power stations, with detailed data on the costs of pipelines and of competing fuels. A. T. Zasukhin analyzes prospects for development and specialization in the machine-tool industry. E. A. Ivanov examines the length of time required to complete different kinds of construction work and the effect on planning for new construction of hangovers of uncompleted work from earlier periods.

V. F. Mashenkov writes on planning and computing labor productivity on kolkhozes, and M. Ya. Lemeshev on the problem of specialization of kolkhozes in the present economic situation. The latter provides some data for individual farms on the percentage distribution by product of labor inputs, costs, and receipts from sales.

The above papers all represent solid journeymen work in applied economics, though much that seems familiar to the Western reader is written with a certain pioneering fervor. The last two articles are not up to the same standard, possibly because of the lack of complete documentation on Western countries in the USSR.

V. M. Kudrov covers some well-worn ground on international comparisons of national income. The upshot is that per capita military expenditures in the NATO countries are horrendous, and that UN statistics artificially lower other countries' national income relative to that of the United States. N. V. Barabanov recomputes French national income and concludes that, so far as the workers are concerned, "the post-war boom did not profit them as much as was headlined in the bourgeois press."

A. PETER RUDERMAN

Garrett Park, Maryland

A Personal Interview Survey of College Economics Teachers. By ANN F. BRUNSWICK and PAUL B. SHEATSLEY. Chicago: National Opinion Research Center, 1961. Pp. 55.

This is a report based on one- to two-hour interviews with a sample of nearly 400 college economics teachers at 113 colleges. The interviews were conducted by the National Opinion Research Center of the University of Chicago on behalf of the American Iron and Steel Institute. The study was designed to reveal the personal characteristics and background of college teachers of economics and their attitudes toward assumptions and emphases in the undergraduate economics curriculum. The report is supplemented by a separate appendix containing the detailed statistics.

Some of the interesting results are these: four-fifths of the economists in the sample are under 50 years of age and a third are under 35; the average amount of teaching experience is 10 years; the average annual income from all sources is \$9,000 but only 30 per cent are entirely dependent upon their teaching salaries; two-thirds were sons (or daughters) of business and professional families; nearly a fifth were born abroad and more than a third of their fathers were born abroad; a quarter profess to no religion; one-tenth

report Republican political affiliation, half regard themselves as Democrats, and the remainder are "independent"; 80 per cent voted for Kennedy and 75 per cent for Stevenson; almost all read the *American Economic Review*; the other journals most frequently read in the order mentioned are *Journal of Political Economy*, *Quarterly Journal of Economics*, *Review of Economics and Statistics*, and *Economic Journal*; most had criticisms of the undergraduate economics curriculum or the principles course, but there was little agreement as to what might be done about them (no one suggestion was offered by more than 10 per cent of the sample); there was general satisfaction with the balance between theory and applied problems but 60 per cent say they stress theory while 25 per cent say they stress applications; most report that they try to teach without ideological or political bias and most are satisfied with the relative emphasis given to the viewpoints of labor and of industry; the overwhelming majority (86 per cent) believe that "basic values should be brought out in teaching economics," but they disagree sharply on what these values should be; in general, the economics teachers do not make extensive use of visual aids and other "modern" teaching devices.

The random list of factual results above will perhaps indicate the nature and scope of the study. Those interested in the present condition of the economics profession will find this a rewarding source.

HOWARD R. BOWEN

Grinnell College

Graphical Economics. By J. K. EASTHAM. Chicago: Quadrangle Books, Inc., 1961 (original edition 1960). Pp. x, 333. \$6.00.

The author, who is senior lecturer in economics at Queens College, University of St. Andrews, Dundee, has produced an intermediate level textbook which presents the bulk of the standard propositions in microeconomics, money, taxation, trade and macroeconomics. The title correctly states the analytical emphasis of the book. Standard, two-dimensional analytical graphs are used profusely in conjunction with clear direct prose to illuminate the subject matter. Upon occasion, algebraic proofs are introduced, some of which are more than necessarily complex, yet the reader needs very little mathematical background to follow them. In the chapter on Income and Employment, interesting use is made of a circuit flow diagram based upon electrical circuitry. The analyses presented are, as the author states in his preface, not novel. Where Eastham can attribute authorship to the constructions used, he does so, but this occurs relatively infrequently.

This is definitely a book in theory as the term is generally understood. Eastham states that the central task of economics is "to formalize the process of decision-making," and he gives virtually no attention to empirical data, the testing of hypotheses, nor the use of theory for prediction. The book likewise avoids involvement with particular institutional arrangements. For that reason, it is suitable for U.S. classes despite its British setting. Even the chapter on money requires minimal supplementation.

The author states that after the manuscript was drafted, parts of it were rewritten to make it more useful to executives. The reviewer is rather skepti-

cal about the direct usefulness of this form of analysis to businessmen. The book would have been strengthened both as a textbook and as a handbook if the basic principles of managerial accounting, as presented by Earley, and linear programming as presented by, say, Dorfman, Samuelson and Solow, had been included. The basic rationale of these modern developments has been presented by these authors in graphic form, and the application of a marginal-style analysis to the multi-input, multiproduct firm is bound to make a stronger impression on businessmen than will traditional two-dimensional marginal analysis. Students can benefit equally.

It is unfortunate that welfare economics as a separate subject is left out, particularly so because part of the chapter on taxation considers the excess burden of indirect taxation as presented by Joseph, but not the more recent criticisms by Little and Friedman. Eastham is careful to confine his presentation to the individual taxpayer, but explicit treatment of the implications of interpersonal comparisons of utility (which pass unmentioned) would be advantageous, and would involve no departure from the general tenor of the text. For example, Eastham speaks of the "... general rejection of utility theory ..." as having destroyed "... whatever plausibility the arguments [for progressive taxation] ever had ...", but accepts the appropriateness of indifference curves as a measure of the burden of taxation three pages later.

In general, the book is well done technically and the constructions and theorems are correctly drawn and proved although the book contains a score of minor slips, graphs misnumbered in the text, and mislabeled or unlabeled intersections that a good proofreader would have caught. Four examples may help prospective users decide whether or not the slips seriously impair the book for their purposes. Eastham overoptimistically states (p. 50) that empirical and theoretical demand curves may be identical. His demonstration of the need for different elasticities for profitable price discrimination is either faulty or the manner of use of subscripts seriously misleading although his conclusion is correct (p. 125). When first-degree discrimination in the product market is considered (p. 131), he fails to note that the demand curve becomes the marginal revenue curve and thus falsifies his analysis. Twice (pp. 124, 200) the most profitable output for a firm is described in the textual material as determined where the maximum distance between the average cost and the demand curve exists although the falsity of this statement is illustrated by the figures to which reference is made. Some would quarrel with a number of details of analysis and some definitions, notably his treatment of oligopoly, which is ostensibly associated with product differentiation and/or selling costs and is confined to those cases where a no-profit equilibrium is attained. Curiously, the demand curve with the Sweezy kink is not discussed.

In his effort to construct a book that will make the more significant propositions in economics accessible to the intermediate-level college student and to the more philosophically inclined businessman who lack training in advanced algebra and calculus, Eastham has done well using many graphs and relatively few words. For those who like the graphical approach, this is a useful book.

DEAN A. WORCESTER, JR.

University of Washington

Introductory Economics. By NORMAN F. KEISER. New York: John Wiley & Sons, 1961. Pp. xiii, 545. \$6.50.

This introduction to economics is a competently written textbook for use in one-semester courses. It is designed to stimulate student interest in today's major problems and issues of political economy, and at the same time to advance economic understanding in terms of an apparatus and technique of thinking about these problems and issues. Emphasizing both institutional description and elementary economic analysis, the author has effectively organized the work around those basic questions that must be answered one way or another by means of the structure and functioning of any economic system: What should be produced? How will the goods and services be produced? How will money and the exchange of goods and services be managed? What total production will be realized, and what provision should be made for growth of the economy? Who should get the goods and services produced?

Although there is continual emphasis on the principal institutional characteristics of the economy of the United States and on relationships of economics to public policy, the main theme is elementary analysis: essential vocabulary, concepts, and principles applicable to policy considerations and decisions. The book begins with an overview of economic systems, focusing on the underlying situation of scarcity and, historically and comparatively, on cultural variations in the resultant functions of economizing. These functions, the counterparts of the basic questions (above) that must be answered in any economic system, are treated analytically, largely from the standpoint of a private enterprise system. Three-fourths of the book, between the initial overview and the final chapters on the international economy and the Russian and British systems, is devoted to this analytic interpretation of the functions of the economy in the setting of major problems and issues. The author's presentation of micro and macro concepts and principles, integral to his explanation of the functions of the economy, is clear and careful. His informative surveys of monopoly, labor problems, agricultural problems, and public finance are woven into his treatment of the function of distributing income.

One limitation of the book is inherent in the one-semester course for which it was written: too many topics for the time available (insufficient time for thorough study of a topic and for thinking through the subject matter), inadequate provision for the time-consuming process of learning micro and macro concepts and principles and developing illustrations and applications. Another limitation is characteristic of introductory textbooks: the need for more effectual explanation of the relationships of elementary concepts and principles to public policy. Textbook writers might well develop improved expository techniques for the movement from concepts and principles (or analytic models) to applications involving policy.

It is interesting to note that the author's conception of a rewarding introduction to economics, though designed for college courses, is similar to the conception developed for guidance of the schools by the National Task Force on Economic Education in its report of September 1961. The college textbook simply reflects, and is adjusted to, the character, pace, and intensity of college-level work. The usefulness of the college textbook, however, like

the usefulness of school books and materials, depends not only on its quality but also on how it is used. The Task Force's enjoiner should be underscored, that "we emphasize the importance of teaching that leads students to examine and think through major economic problems for themselves."

JAMES H. STAUSS

Grinnell College

Economics, Measurement, Theories, Case Studies. By GEORGE SOULE, with the assistance of Leland T. Traywick and Francis C. Boddy. New York: Holt, Rinehart and Winston, Inc. Pp. xii, 446. \$5.75.

Professor Soule's book "Economics, Measurements, Theories, Case Studies" is an introductory textbook designed for students of liberal arts. The book is, as indicated by the title, subdivided into three parts. In the first one the student learns in a rudimentary way what a business financial statement, a government's budget, and national income accounts are. In a few pages he gets a quick glimpse at statistical measures, such as simple averages, weighted averages and index numbers. After a warning that statistics should be used with care he is then ready to study the second part.

I had expected, according to the title of the book that this would be "Theories." It is rather, as the author terms it in line with its contents, "How Our Institutions Operate." In fact there is not much theory in this part. A short section deals with the "Theory of Supply and Demand" where the usual intersecting supply and demand curves are shown. An eager student will look in vain however for an explanation of what determines the supply curve of a firm: the book does not include a discussion of marginal cost, and marginal concepts in general. As a consequence such standard problems as the minimum cost point under competition or the differences among competitive, monopolistic and monopoly situations are either not treated or only in an unsatisfactory manner. One of the most important problems in economics, the problem of maximization, is thus not brought into a sharp focus and is largely by-passed.

Another section deals with the "Theories of Money and Income." The author starts out with the quantity theory, which is adequately handled. I found the determination of income somewhat confusing. A student may have difficulties in understanding from the text how a Keynesian system of the *General Theory* type, to which the author refers, works. There is no clear indication how the money supply, interest rates, and investments are related. The student learns that one of Keynes' great contributions in the *General Theory* was to indicate the possibility of a permanent underemployment equilibrium. In this context I think it would have been advisable to mention the existence of a liquidity preference function and discuss a few of its properties. This is not done, and the reader may be left up in the air.

The last part of the book deals with case studies in economics. The problems discussed range over the level of steel prices, an investigation of who the villain is in a cost-push inflation, and the needs of underdeveloped countries.

One cannot, of course, expect that an introductory textbook will set forth

all the finer details of economic theory. A certain amount of rigorous analysis at the elementary level—as contained in some other widely used introductory textbooks—is, however, in my view, desirable and can be readily understood. In this respect Soule's book may be found somewhat disappointing.

A student who works through this volume will get a pretty good idea what our institutions and main economic problems are. He may, on the other hand, feel that he misses a theoretical framework—however simple—which would permit him to put each of the many things he has heard about in a proper place, and which would help him to get a rough idea what has an influence on what.

Soule's approach is basically an institutional one. There are certainly merits in this. In the opinion of this reviewer an introductory textbook should however possess a balance between its institutional and theoretical contents. This balance is missing in this book and may impair its usefulness as a text for beginning students in economics.

KARL W. ROSKAMP

Wayne State University

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

Output, Input and Productivity Measurement. National Bureau of Economic Research, Studies in Income and Wealth, Vol. 25. Princeton: Princeton University Press, 1961. Pp. x, 506. \$10.00.

The National Bureau of Economic Research has given producers and users of productivity data yet another reason for being grateful for its efforts. A volume of at least equal scope would be required to review and evaluate the rich contributions of this conference report. It consists of three groups of papers, with comment, covering: (1) Productivity and the Measurement of Real Outputs and Inputs; (2) The Estimation of Real Product in the Economy by Industries; (3) The Estimation of Real Factors Inputs.

The tone of the volume is set in John W. Kendrick's introduction: "... productivity remains one field in which economic statistics have been ahead of theory"; and in Kenneth Boulding's comment that "In all problems of measurement, the fundamental question is, *what questions can be answered better as a result of the measures devised.*"

The first Part opens with an essay by Irving H. Siegel on index design, and is followed by a provocative paper from George Stigler on theoretical aspects of productivity measurement. The three other papers of this Part summarize important collections of natural resources and productivity data. Harold J. Barnett's essay explores changes in natural resource scarcity; and productivity in natural resource industries is analyzed by Neal Potter and Francis T. Christy, Jr. Finally, Leon Greenberg collates the valuable data on productivity from the Bureau of Labor Statistics.

In Part II, V. R. Berlinguette and F. H. Leacy review Canadian experience in real product measurement. Problems of international comparisons of real product are dealt with by Milton Gilbert and Wilfred Beckerman. Two papers

on the United States complete this Part. Real product by industrial sector is the topic for Jack Alterman and Eva E. Jacobs; and Almarin Phillips deals with industry net output estimates.

Kenneth Boulding opens Part III with a lucid discussion of the concept of economic input. Labor input measurement is the special sphere of the following paper by Edward F. Denison. Two contributions deal with problems of measuring capital: concepts of real capital stocks by Richard and Nancy Ruggles; and Daniel Creamer's notes on long-term capital estimates. The final essay of the volume is on factor substitution and the impact of taxation on composition of output.

An able introduction by John W. Kendrick summarizes salient points of the several papers. Altogether, this is distinguished scholarship, and the program committee (John W. Kendrick, Chairman, Harold Barger, T. C. Schelling and Irving H. Siegel) deserves the thanks of the profession.

An interest in "total productivity" and emphasis on accounting categories for measurement pervade much of this work. This is part of the effort to utilize deflated national product as a measure of final physical goods and services. These essays suggest problems attending such efforts beyond those dealt with in this volume.

After the money value of goods has been deflated by a price index, it is assumed that the resulting series measures a changing quantity of goods, however affected by alteration in quality. The dollar of goods, however, represents payment not only for production but also for decision-making services. The latter have grown remarkably as a portion of the total cost of industrial activity. Hence a deflated dollar of goods measures a changing proportion of actual goods and administrative services. The same factor affects international real product comparisons at a single time.

Measuring inputs in accounting categories opens up the problem of coping with inputs that are not readily given money value but are certainly important for variation in productivity levels, however output may be measured. Knowledge is a most important factor in production and its monetary valuation represents a world of unsolved problems. Organization, as in the timing of operations, has a powerful effect on productivity. I have seen productivity raised by 15 per cent in one year in large plants simply by reducing the variability in weekly production rates. The measurement of "organization" as an input is, to my knowledge, still an unsolved problem.

If one takes a cue from the relativism that is underscored by Siegel and Boulding, then the national accounting approach to productivity can be appreciated as especially useful for analysis of distributive shares of income and kindred problems. The development of productivity measures which emphasize physical categories is a more appropriate approach for the diagnosis of productive systems. Aspects of both approaches are intermixed in the papers of this volume. I think more formal relativism in productivity analysis will give strength to the knowledge of the field.

I find that the concluding essay on factor substitution leaves something to be desired. Its conclusion, that wage pressure plays a negligible role in deter-

mining changes in production methods will not stand close scrutiny. The relevant data have not been adequately reviewed.

On the whole this volume makes a series of substantial contributions which will surely encourage new inquiry in this field.

SEYMOUR MELMAN

Columbia University

Stratégie du marché—théorie de la firme et vente sous marque. By MARCEL MICHEL. Paris: Presses Universitaires de France, 1961. Pp. 246. NF 24.00.

In this book on price theory and market strategy the author is primarily concerned with the behavior of commercial intermediaries (retailers in particular) in multiproduct markets operating under conditions of monopolistic competition. He points out that—apart from the applications of the full-cost theory provided by John F. Due and H. Smith, whereby they show the inevitability of retail price stability over the long run, and apart from the explanations of marginalistic demand of intermediaries by E. R. Hawkins—very little has been done in this area. He also suggests that the problem of retail price-fixing by the producer is another important feature requiring analysis for the determination of market strategy. Here he notes the work done by H. Clay, B. S. Yamey, and J. P. de Bodt. Using all of these contributions as a basis, the writer seeks to develop a coherent exposition of the principles which govern selling policy.

He begins by devoting two chapters to the problem of profit maximization where the producer is turning out a trade-mark commodity with no intermediary between himself and the consumer. Various methods of finding the optimum combination of selling price, advertising expenditures, and volume of production are examined. The special price-setting problems of oligopoly are also taken into account, and a formula for determining maximum oligopolistic profit with varying selling programs is considered. Throughout this discussion the writer relies heavily on the contributions of Joel Dean, J. P. de Bodt, R. M. Shone, K. E. Boulding, F. H. Hahn, and N. S. Buchanan. While the analysis is in no sense original, it constitutes a clear and concise synthesis of the various views.

In the third chapter multiproduct output is introduced. Using the principles established by Joan Robinson, the author shows how the producer of a single commodity is encouraged to use several trade-marks and to differentiate prices in order to exploit varying market elasticities. This leads to a discussion of basic product diversification. Output of products where there is interdependence in the demand, and of products where the demands are not interdependent, are considered. He concludes that producers will concentrate on those products which have the least elastic demand, and also on those which will sell at the highest level above marginal cost.

At this point the author pauses to consider whether or not a policy of price differentiation for similar goods sold under various trade-marks is in the public interest. He reaches the conclusion that low-income buyers normally

benefit because of the greater elasticity of their demand, although under special circumstances it is possible for both low-income and high-income buyers to benefit.

Finally, in the fourth and fifth chapters, the retailer as an intermediary is brought into the analysis. Pricing policies on the basis of traditional mark-ups or of oligopolistic consensus are examined and rejected. The thesis of intuitive marginalism, wherein the retailers presume varying elasticities of demand for different commodities, is advanced. The author argues that, if this thesis holds, the marginal revenue curve of each intermediary becomes his demand curve in purchases from his predecessor in the chain of distribution. Thus retail prices become relatively fixed, even though costs of production vary. Also retail price-setting by the manufacturer of a trade-mark commodity is encouraged.

Where all retailers face demands of about the same elasticity, the retail price will normally be that which provides maximum profit for the producer and for each of the intermediaries. But the various retailers usually do not sell to a homogeneous clientele. Retailers who cater to high-income buyers will press for the imposition of minimum retail prices by the manufacturer. If the producer gives way to this argument, he loses the advantage of price differentiation. Moreover, differences in demand elasticities encountered by luxury shops as compared to large-scale distributors are such that a fixed minimum price will be too low for the one and too high for the other. Competitive forces among large-scale distributors will then almost certainly operate to restore price differentiation through discounting. A minimum price simply provides a yardstick for price-cutting, and is disadvantageous for the producer who seeks to impose a retail price at too high a level.

The introduction of distributional intermediaries into price analysis constitutes an important addition to the theory. The assumption of intuitive marginalism upon which the argument is based might be difficult to prove or disprove. Nevertheless, it is implicit in almost all price analysis, and is therefore quite as reasonable in this area as in any other. Certainly the findings supply some answers to problems of selling policy where previously no answers existed.

HENRY GRAYSON

University of Maryland

Keynesian Economics in the Stream of Economic Thought. By HARLAN L. McCracken. Baton Rouge: Louisiana State University Press, 1961. Pp. xv, 201. \$5.00.

In many respects this work on Keynesian economics is a remarkable and rather unique addition to the contributions made these past twenty-five years toward an understanding and explication of *The General Theory of Employment Interest and Money*. As an undoubted tribute to its own intellectual majesty, that product of John Maynard Keynes has been subjected to almost every conceivable type of criticism, most of it along intensive analytic lines. Summarizing with exceptional clarity and insight both the essentials of Keynesianism and the cumulative results of this intensive critical analysis,

Professor McCracken provides an interesting and instructive historical setting for this controversy of a quarter of a century. With it he traces several fundamental Keynesian ideas back to eighteenth and nineteenth century sources and on the basis of his cogent summaries, as well as his own theoretic strictures, projects the subject into the future for a tentative determination of the permanent scientific values of the "New Economics."

Needless to say, those who are emotionally committed either for or against Keynes at this late date will find grounds for objection to this study. To view the work from this insular angle would be both pointless and unconstructive. The author doubtless set a monumental task for himself in attempting a comprehensive appraisal of the meaning, significance, and enduring utilities of Keynesian economic ideas within the broad context of the development of modern economic thought. As professor emeritus and former chairman of the department of economics at Louisiana State University, he brings to bear his accumulated knowledge and wisdom in the pioneering fulfillment of this task. Dedicating the work to the graduate students of his Keynesian seminar, he effectively combines in this study an analytic grasp of Keynes' thought, the perspectives of general theory and business cycle research, and a rich background in the history of economic thought. The book reflects brilliantly these many strains of training and experience.

To be sure, this volume will not be the last of its kind. As the years pass both the intellectual and existential bases for still more objective historico-analytic evaluations of Keynes will be extended, and his ideas and influence will be viewed in a clear light. However, McCracken's contribution represents an important link in the chain of research and judgment that the future will forge further. The outlines of its historico-analytic treatment will undoubtedly serve as the paths for others to develop the subject in still greater detail. And unquestionably its generalizations and interpretations will be accepted or rejected as our vision expands in latitude and scope.

Divided into two parts, the book deals first with the pre-Keynesian economists and then with the Keynesian system of economic thought. One reason for the division is to show what are the new and not-new ideas in the system. The author covers in the first part such topics as Say's law of markets, the critical thought of Malthus, the macroeconomic orientation of Adam Smith, Lord Lauderdale and Bernard Mandeville, the science and art of economics, the role of Richard T. Ely and certain founders of the American Economic Association, and the paramount ideas advanced by John R. Commons. The second part of the book is devoted to the basic principles of the Keynesian system, their applications in the fields of monetary and fiscal policy, the theory of interest and prices, and the future of Keynesian economics. The chapters are well organized and lucidly written. The bibliography is not as extensive as it perhaps should be, but most of the key works are listed.

The author's discussions of Malthus, Lauderdale, and Commons disclose many keen insights and refreshing viewpoints. He makes his major point that ideas of effective demand, macroeconomic analysis, the fallacy of composition, and the impact of expectations on present values are not new with Keynes. His treatment of Malthus and Commons is substantial enough to dissipate

the seeming novelty of some of Keynes' determining ideas. The chapter on Commons is particularly instructive in showing why this outstanding American institutionalist regarded Keynesianism as another managerial school of thought which could breed totalitarian inclinations in thought and behavior. But some of McCracken's observations and generalizations regarding Say's law of markets, Ricardo's thought, and the presumed sterility of classical economic logic can be easily refuted. It is, for example, scarcely impressive to deprecate the logical structure of classical thought in the first part of the book and later to conclude that classical theory comes into its own in re-emerging conditions of brisk economic activity.

In the second part of the book the reader is exposed to a rather stimulating coverage of Keynesian essentials and their qualified applications in economic policy. Although here, too, a number of interpretations concerning the causes of the great depression or the actual impact of Keynesian thinking on the policies of governments may be subject to valid criticism, the author's analysis is more secure. He concentrates on limiting factors in his discussion of monetary and fiscal policies and gives an absorbing account of both factual and theoretic developments following the so-called Keynesian revolution. More emphasis could have been placed on the decelerating effects of increasing consumption upon economic growth and also the usability of Keynesian constructs in conservative thought. Projecting his analysis into the future, McCracken predicts that the Keynesian tenets of effective demand, the consumption function, the multiplier, expectations, and the qualified theory of prices will remain. Slated to evaporate are the theory of the matured economy, overemphasized macroeconomics, lighthearted attitudes toward deficit spending, and the "givens" of monopoly and monopolistic competition.

By virtue of its diverse contents and lucid presentation this work is capable of a wide appeal. Economic and general historians, theorists, students of public finance, money and banking, and labor will find its interrelated subject matter of considerable interest and worth. What's more, it makes for enjoyable reading.

LEV E. DOBRIANSKY

Georgetown University

Malthus & Lauderdale, the Anti-Ricardian Tradition. By MORTON PAGLIN. New York: Augustus M. Kelley, 1961. Pp. 184. \$4.75.

"As presented by Mr. Ricardo, political economy possesses a regularity and simplicity beyond what exists in nature; as exhibited by Mr. Malthus, it is a chaos of original but unconnected elements," Torrens wrote in 1821. Paglin's study affirms the judgment and helps to explain why the world has preferred Ricardo to Malthus, Lauderdale, and those like them. There were other reasons also, according to Paglin. Lauderdale and Malthus were not as persistent, had not an able or industrious coterie, were compromised by their support of agricultural protection, and were hopelessly conservative in their politics.

Economics would have come to its present position more quickly if the anti-Ricardians had been more effectual. Their contributions were substantial.

While Ricardo wanted to explain the distribution of income (which was hardly a critical issue in 1817), Lauderdale investigated the prior question of what income and wealth are, and Malthus' purpose was "attending to facts and experience." Both rejected the labor theory of value and so disencumbered economics of a notion as old as common sense and as undependable. In its place they put supply and demand. They distinguished between demand as a quantity and as a schedule, and Lauderdale had the idea of price elasticity of demand. He avoided Ricardo's error of thinking that wages did not measure the output of labor and Smith's mistake of distinguishing between productive and unproductive labor. Both attended to macroeconomics more than the Ricardians did, Malthus with his celebrated notion of overproduction and Lauderdale in showing the relationship between aggregate demand and fiscal policy. Contemporary economics will quarrel with many of their formulations, but it contains more of their ideas than it does those of Ricardo. In his day Lauderdale was treated indifferently at home, but with respect abroad. He influenced the American, Daniel Raymond, whose principle of policy was brief: "All a legislator has occasion to ascertain, is, whether the nation has full employment, and if not, to furnish it." The method was a discriminating use of the tariff, and Raymond's explanation is an interesting exercise in the economics of development.

Malthus was not ignored. The Ricardians got some of their ideas from his early work, and his later ideas engaged their interest. But they were unpersuaded. His long correspondence with Ricardo is a monument to the persistence and amiability of the two men. Each tried to bring the other to his own views without, it seems, really expecting to succeed. They were like Adams and Jefferson who also were engaged in a notable correspondence at that time and had no more hope of changing each other's mind.

An important part of Paglin's study is the comparison of Malthus' *Essay* on population with his *Principles of Political Economy*. In the former he assumed full employment (and underproduction) and in the latter unemployment and overproduction. The two cannot be reconciled, Paglin explains, by supposing Malthus was writing of the long run in the *Essay* and the short run in the *Principles*, because in fact he made no such time distinction. The inconsistency was an example of the "unconnected" elements in his doctrine. But as Sidney Smith said of him, "I would almost consent to speak as inarticulately if I could think and act as wisely."

Paglin has done well to recall Lauderdale and Malthus to us. A part of his study is necessarily a statement of Ricardo's doctrine, and while meaning to rescue its critics from neglect he seems nearly to have succumbed to it himself. His explanation of Lauderdale's doctrine would have been more instructive if he had included a statement of those portions of Smith's doctrine which Lauderdale disputed. He might also have told us more of Lauderdale's transformation from Jacobin to Tory. It is a little cursory to say that his economic policy reflected the conservative ideas of Burke since Burke was not a conservative in the strict meaning of the word. In any event he did not influence Lauderdale until the latter was past 60. Before that Lauderdale was a champion of *laissez faire* in its most extreme form. For example, he opposed

child labor legislation in 1818 on the grounds that "labour ought to be left free." To say that Malthus' ideas of policy expressed an attachment to a nonindustrial society is to imply that they had more consistency than his positive economics had. Actually he wrote that "the effects of manufactures and commerce on the general state of society are, in the highest degree, beneficial" (*Observations on . . . the Corn Laws*, 1815, p. 31). As a politician he was no more consistent than as an economist. I must object also to the implication that the Ricardians were unqualified free traders. They were not; and Ricardo himself advocated permanent protection to agriculture.

WILLIAM D. GRAMPP

University of Illinois, Chicago

Intermediate Price Theory. By DIRAN BODENHORN. New York: McGraw-Hill Book Co., 1961. Pp. vii, 318. \$6.75.

In the traditional manner, Diran Bodenhorn has compiled a text of standard dimensions dealing deductively with profit maximization and utility maximization in a framework of static, marginalist equilibrium theory. Consistency and determinateness having been dearly purchased, they are displayed tidily, competently and mathematically. Long-run and short-run, competitive and noncompetitive contexts are studiously explored. Limitations of method are confessed but are not permitted to inhibit the familiar transition from "analysis" to "theory" to "applications." Since this is the sort of book that can be done well, it is done rather often; and this specimen of the genre is certainly adequate.

The author says that his book is an "intermediate" text that concentrates on "the proper approach" to price-theory problems. Should a reviewer confine himself to the criteria that would substantiate this claim, or should he measure the performance by standards he considers more valid? If the former, then the book is indeed "intermediate," in the sense that beginners would not tolerate it, and "proper" to the degree that exercise in deductive, axiomatic, stringently abstract reasoning about the implications of self-interested acquisitiveness is proper. On this ground, one would raise only a few objections to the book; *viz.*: Do firms, families, unions and nation states have *self-interest*? Are the tidy tautologies of maximization instructive? Are awkward expositions retrieved by the liberal interspersion of such words as "clearly," "of course," "necessarily," and the like? Why so little use of conditional tense and subjunctive mood in a work so laden with assumptions? Is "economic rent" unambiguously defined on page 290? That sort of thing. If the latter, then I have more to say.

To me the book is entirely elementary, however intimidating to the beginner. (I am thinking of my teacher who said, "Only a coward confines himself to heroic abstraction.") Bodenhorn shows us (as others have) what price theory must be like if it is to be tamed and confined within analogies to plane geometry and the simple differential calculus—just as Walras showed us what an economy would have to be like if it were autonomously and spontaneously to achieve a multidimensional equilibrium.

Since Bodenhorn is doing what has been done (better) before, he should be obligated to infuse into the basic traditional models some of the new wisdom. Why not a word on Löwe's handling of expectations in equilibrium models? On Knight's handling of the variable meaning of "the short run"? On Dean's concepts of profit? On Myrdal's treatment of latent political premises in economic thought? On Koopmans' "shadow prices"? On Graaff's welfare propositions? On Lindblom's "systems mix"? The author enters realms where these insights are pertinent, but scarcely scratches the surface. In intermediate discourse, I think, a talent for abstraction should be wielded with humility; a concern for the limits and dangers of the method is becoming. Each time the tired, traditional material is reworked, more should be assimilated; otherwise everyone's time is wasted.

What makes many texts so arid is the lack of any apparent devotion to the teaching of students. One should not pay \$6.75 to see an author pirouette for his peers. Seeking to gain some understanding of the world in which he lives, the student should object to uninformative and really quite unsophisticated statements about how demand goes downward and to the right, how firms seek out tangencies, and how one thing cuts another from beneath.

A student likewise should not have to wait for an "advanced" text to discover such things as the interdependence and inseparability of "maximum production" and "equitable distribution," or the multiplicity of the supposedly singular "Pareto optimum," or the operational impossibility of identifying the marginal productivity of labor; but after Chapters 17 (Welfare and the Price System) and 19 (Applications to the Labor Market), he must still wait.

A student should be helped early in the game to avoid the value judgment which so often slips in just after the *wertfrei* oath is taken. For example, he should not have one "popular idea" (that teachers are really worth more than they are getting) dismissed as outside the scope of economics, and in the next breath see another popular idea (that the free market has the function of telling the employer what the employee is worth) enthroned as a positive principle. Simple recourse to the value-smuggling word "function" does not make free enterprise a scientific choice nor put an end to the arbitrariness of its "costing" of inputs.

A student at the intermediate level could be told (couldn't he?) that "revealed preference," "disutility of labor" and "hedonistic motivation" do not exhaust the psychological and philosophical aspects of getting a living. True, one is free to abstract from all that cannot be manipulated with mathematical logic; but then one should stay clear of easy "applications." The pious hope that an easy point of departure "usually points in the right direction" mocks the apparent technical rigor of many a text.

Some books are written too soon and are circulated too widely. Although I have no reason to think that the present book is a case in point, some books are written prematurely because of administrative pressure to publish and not primarily to promote learning. For the former type I suggest that only one copy be printed and then impounded in a special library set aside for perishables published in response to the edict of publish or perish. This copy

can be destroyed when the promotion is made. In this way students are spared, one does not read what he will wish he had not, and we diminish the likelihood of denuding our national forests.

DANIEL HALE GRAY

Middlesex County National Bank in Massachusetts

Preistheorie. By KARL BRANDT. Ludwigshafen: Fachverlag für Wirtschaftstheorie und Ökonometrie, 1960. Pp. vii, 208. DM 13.80.

Professor Brandt's book is the first volume in a new German series on economic theory, designed to give the student a concise and rigorous survey of economic principles. The present volume deals with the traditional content of price theory and leaves for later volumes such topics as game theory and operations research. As the author states in the preface, an integration of these topics appears possible only after economists have been more successful in relating an exposition of different market structures with entrepreneurial decision-making and consumer behavior.

The first three chapters discuss the basic problems of price formation. Of special interest is the introduction to the methodology and history of price theory. Brandt distinguishes the historical, the sociological, and the "model-theoretical" approach; the latter alone is said to permit a theoretical understanding of the role of markets and the process of price formation. As should be expected, German and Italian contributions to the historical development of price theory receive more attention than is customary in English and American texts. Modern price theory is traced back to the work of the mercantilists. Verri and Frisi, Canard and Buquoy, as well as J. Becher, are all concerned with establishing a suitable classification of markets. Cournot is credited with founding modern price theory through his successful contrast of price formation in different market structures. Special recognition is given to Auspitz and Lieben for their original approach to the explanation of exchange functions.

The following three chapters take up the processes of price formation under conditions of competition, monopoly, and oligopoly. Here again, the careful references to historical antecedents are impressive. Thus, the concept of price elasticity is illustrated by G. King's observations on crop yields and the price of wheat. Conditions of price stability are discussed under various elasticity assumptions which in turn are related to market structures. Monopoly is defined to include cases of sole transactors on either the supply or the demand side of the market. There follow comments on price formation under "collective monopolies" which originate through horizontal or vertical integration. The discussion of bilateral monopoly summarizes the more extensive treatment given by E. Schneider in his *Introduction to Economic Theory*. The discussion of various oligopoly situations appears particularly well done.

The last three chapters deal with "heteromere" markets, the influence of expectations, and problems of price dynamics. Heteromere markets exist wherever nonprice competition becomes important, illustrated by spatial competition, quality competition with selling costs, polypolistic competition with kinky demand functions. In this general context the author considers the wide

variety of market structures where it becomes impossible to judge "when monopolistic competition shows restrictions harmful to the consumer and when economies of scale with quality competition should be encouraged." This consideration leads to the more general introduction of expectations as they influence market behavior under conditions of uncertainty. Here also are introduced some elements of game theory and operations research, based on the classification of market strategies first propounded by R. Frisch. This line of reasoning leads to a basic distinction between adjustment to given markets and creation of new market structures. Price determination with time lags, but static market structures, is explained by the cobweb theorem. A brief sketch of general equilibrium theory, with an outline of dynamic price changes, concludes the volume. In a book full of historic references it seems strange not to find Schumpeter mentioned in the discussion of competitive dynamics.

Brandt's *Preistheorie* well accomplishes its purpose to provide "a brief introduction to the principles of market and price formation." As such it offers to the German student a good survey of the U.S. literature; its didactic usefulness is enhanced by a German translation of Allen, Morgner and Strotz's *Problems in the Theory of Price* designed to complement this new text. But the book should also be of interest to the U.S. economist looking for a concise outline of recent German literature. For purposes of reference the book would gain from the addition of an index; also the bibliography could have perhaps been arranged more usefully by topics. Yet these are minor faults which detract little from the merits of a book written with clearness and precision. We look forward to future volumes in this promising German series on economic theory and econometrics.

WERNER HOCHWALD

Washington University

Economics and American Industry. By LEONARD W. WEISS. New York: John Wiley, 1961. Pp. xi, 548. \$7.50.

Professor Weiss has undertaken the difficult task of attempting to combine in a single, intermediate-level text a systematic treatment of price and distribution theory and several case studies of American industries. For those who are interested primarily in a comprehensive, cohesive, and self-contained micro-theory text, or primarily in a thorough case-study analysis of American industries, the results will seem disappointing. However, for those interested in a text providing the essentials of the theory of the firm, along with illustrations of important aspects of economic theory and public policy, and realistic qualifications of theory as it is taught in undergraduate courses, this book will be a welcome addition.

The general organization of the book is traditional in the sense of treating in order pure competition, followed by pure monopoly, oligopoly, and monopolistic competition. Each case study includes a discussion of the standard theory and an analysis of industry cases in terms of history, structure, and performance, but not necessarily in that order. In the early chapters Weiss moves from the theory to actual case data (e.g., pure competition), providing

a thorough groundwork in cost and demand theory and its usefulness in appraising the problems and policy issues in agriculture and textiles. In the cases of monopoly, oligopoly, and monopolistic competition, Weiss works initially from the empirical data back to the theory, always attempting to evaluate realistically observed market behavior. Proceeding in this way, Weiss succeeds in developing theoretical concepts to a sufficient degree of sophistication so that they become meaningful, understandable, and useful to the student.

In addition to industry studies of agriculture, textiles, aluminum, steel and automobiles, the book includes a fairly detailed and interesting analysis of regulated industries (electric power), retailing, and factor pricing (steelworkers). This last chapter is a useful addition, but falls short of the author's early promise of "a systematic presentation of . . . distribution theory" (p. v.).

The use of numerous graphic illustrations and statistics on prices, output, profits, productivity, makes the book interesting reading and provides ample material for discussion and analysis of the case studies. Weiss writes easily and lucidly, which makes the book both palatable and teachable.

On questions of public policy, Weiss is generally quite circumspect in his evaluation of the performance of individual industries and broad industry groupings. As a result, his analysis does not always come to grips with the public-policy issues arising out of abusive, predatory, and exclusionary behavior of particular firms. For example, in discussing aluminum he makes several observations that seemingly overlook facts brought out in the record of the antitrust case. ". . . Alcoa had to compete with other materials such as steel, copper, and magnesium. The difference between such competition and that of Fords with Chryslers and Buicks is only a matter of degree" (p. 165). "If Alcoa did have any deliberate policy of exclusion, it lay in its expansion" (p. 180); and "Monopoly might not have been inevitable in the aluminum industry to start with, but Alcoa, once established, was able to hang on to its exclusive position while usually staying well within the bounds of normal business ethics" (p. 181). Considering Alcoa's efforts to retard magnesium's development under well-disciplined control through cartel agreements with Dow and I. G. Farben, its price squeezes on competitors and its other practices designed to maintain its monopoly position, one must pause before accepting such observations at their face value. Similar observations might be made about the attention given to market conduct in steel and autos.

The final chapter is devoted to an analysis of the structure and performance of U.S. industry generally. Using earlier studies as well as some original statistical tests applied to broad industry groupings, Weiss examines the relationships between structure (concentration) on the one hand, and profits, efficiency, selling expense, and progressiveness on the other. His general conclusions regarding industry performance are that: (1) High profits and high wages are associated with high industry concentration with the result that an estimated 8 or 9 per cent of national income (or roughly \$40 billion) consists of "excess" profits and "excess" wages. (2) Expensive advertising, which is of little or no direct social value, seems to be primarily a problem connected with certain concentrated industries. (3) While gains in efficiency from concentration may make up for waste in some cases, in a larger number of

cases we can have the advantages of large scale and competition. (4) On the average, concentrated industries do not seem to do any better (or worse) than the competitive ones in the rate at which they improve efficiency. (5) Economic concentration is one of the important barriers to movement of factors of production and probably helps perpetuate the inequality of income. (6) The concentrated character of certain industries has contributed to the creeping inflation since the mid-1950's. While these findings are neither new nor startling, they provide a much broader base against which the appropriateness of the conclusions of the case studies can be tested.

In short, Weiss has done a very creditable job of attempting to reconcile theory with industry behavior. Those who have been looking for an intermediate-level text that is concerned with making economic analysis both useful and interesting to the student will be well-advised to give this text careful consideration.

ROBERT F. LANZILLOTTI

Michigan State University

Economic History; Economic Development; National Economies

Narodnoie bogatstvo i narodnokhoziaistvennoie nakoplenie predrevolutsionnoi Rossii. By ALBERT L. VAINSHTEIN. (National Wealth and Accumulation in Prerevolutionary Russia.) Moscow: Gospolitizdat, 1960. Pp. 483.

The bulk of this book (Part II, pp. 149-366) is devoted to a detailed estimate of material reproducible wealth, located in the Russian Empire (ex. Finland) at the end of calendar year 1913, with parallel sets for totals and components within the pre-1939 boundaries of the USSR. The stock estimates, on a depreciated basis, are supplemented by approximations to capital accumulation for 1913, and to average volume for 1911-13. In the last Part (III, pp. 367-446), we find an extensive summary in which total domestically located wealth, and its accumulation, are distributed among various user sectors and by type of capital good (buildings and plants, other construction, equipment, livestock etc.). In the last chapter (pp. 426-45) an estimate is also provided of net foreign indebtedness of Russia at the end of 1913, which can be subtracted from total domestic wealth to derive national wealth. The first Part (I, pp. 15-146) is a lengthy review of conceptual and methodological questions in the literature; but it fails to cover many of the recent writings, and to a reader familiar with the field it is of limited value except for the references to the Soviet literature and to earlier estimates of wealth in pre-revolutionary Russia.

The presentation is sufficiently detailed so that the user can omit or include various components (consumer goods in hands of households, military items, monetary metals, etc.), depending upon the concept which he wishes to follow. The user classification, distinguishing some fourteen groups, is rather mixed, reflecting not so much the importance of the user-groups as the exigencies of estimation; but agriculture, industry (total), and the government sectors can be distinguished, as well as the several transportation utilities. The underlying sources are fire insurance data (accounting for

roughly half of the total), budget inquiries (largely for the agricultural sector), special reports and accounts of the government-owned or -controlled utilities, city governments, and, of course, the usual product of the governmental statistical service. This reviewer, not being familiar with the primary statistics for prerevolutionary Russia, is not capable of judging how fully the available data were exploited and how judiciously the material was used. But, on the evidence in the book, a long and consistent effort appears to have been made to use a wide variety of data and to cover explicitly all significant components of material reproducible wealth within the country.

The estimates of capital accumulation are less securely founded than those of capital stock. The former are available in the fullest detail for 1913 alone; but even those for 1911-13 cover a period that, according to the author's comments (p. 150), represent an unusually favorable experience. At any rate, the over-all magnitude of the accumulation (or net domestic capital formation) totals raises questions that are not raised by the capital stock figures. The latter, excluding consumer goods in the households and military items, amounted to 53 billion roubles (pp. 368-70); the national income for the period, cited by Strumilin (Foreword, p. 8), is set at 16.4 billion. This yields a capital stock-output ratio of 3.2; or allowing for a possible adjustment of the denominator, which probably relates to material product, of close to 3—a ratio within the range of those shown for a number of other countries. But average capital accumulation over 1911-13, again omitting consumer goods and military items, is estimated at 2.44 billion roubles (pp. 417-18), or 15 per cent of the national income total cited. Even allowing for a reduction by about a tenth for the omission in the denominator of services not embodied in commodities, the net capital formation proportion is far too high, particularly for a country at the low level of per capita income of Russia before the First World War. The same question arises when we compare the rate of growth of national wealth, of 4.9 to 5 per cent, shown in the book, with the rate of growth of total agricultural and industrial output for long periods preceding 1913 (estimated at between $2\frac{1}{4}$ and $2\frac{3}{4}$ per cent per year by Raymond W. Goldsmith; see his "The Economic Growth of Tsarist Russia," in *Economic Development and Cultural Change*, April 1961, 9, 441-75, particularly pp. 472-73). It is unlikely that the long-term growth of national product in Russia before the First World War was at the rate of 4 to 5 per cent per year suggested by a combination of a net capital formation proportion of $13\frac{1}{2}$ to 15 per cent and a capital-output ratio of 3 to 3.2; nor that this latter ratio was at such low levels in the earlier decades as to make the high capital formation proportion shown for 1911-13 a plausible approximation to long-term levels.

It is curious that Strumilin, in his foreword, refers to a past controversy concerning, among other items, the prerevolutionary rates of capital accumulation (in 1927, in his own attack on Kondratiev); notes that the estimate of this rate at $8\frac{1}{2}$ per cent of national income was criticized by economists associated with the Gosplan as far too low; and welcomes Vainshtein's upward revision of the author's own, earlier, much lower figure. In the light of these comments, it is interesting to note that the author himself makes no compari-

sons of capital accumulation with national income (this is done only in Strumilin's rather contentious foreword); nor does he examine the level of the implied net capital formation proportion with that in other countries and consider the questions that would have arisen as a result of such comparisons.

But these strictures, relating to the estimates of capital accumulation, do not bear upon the measures of capital stock, and should not lead to a neglect of the significant contribution made by the volume. It is clearly of wide reference value to readers interested in the economic history of Russia and of the USSR, and in the magnitude of national wealth, in its relation to national income and its components, in the process of economic growth.

SIMON KUZNETS

Harvard University

Industry Comes of Age: Business, Labor, and Public Policy, 1860-1897. By EDWARD C. KIRKLAND. New York: Holt, Rinehart, and Winston, 1961. Pp. xv, 445. \$7.50.

This is Volume VI in the Rinehart series on the economic history of the United States, and the seventh to be published of nine projected volumes. Paralleling Fred A. Shannon's *The Farmer's Last Frontier* (Vol. V in the series) in covering the last half of the nineteenth century, Kirkland's work treats business cycles, banking and finance, railroads, natural resources, domestic and foreign trade, tariffs and patents, urbanization, industrialization, labor, and government policy. The title and subtitle, although seemingly narrower than the scope of the book, nevertheless correctly indicate its emphasis.

Anyone who has met Kirkland will recognize this as his book. The twinkle in his eye and the wry wit of his discourse cannot conceal the seriousness of his purpose and the depth of his scholarship. The aptly turned phrase, the appropriate incident, the colorful quotation, the witty comment appear page after page. As a consequence, this is a readable and enjoyable book.

These stylistic pleasures are not mere surface phenomena, sugar-coating a mass of fact and analysis. It is said that style is the man; in this case style is the method. Kirkland has chosen: "to find out how the period actually looked to those who participated in its activities: business men, labor leaders, and politicians." He approaches his subject neither through statistics nor through theories of economic growth, but through thoughts and consequently words of men of the time.

Style and method are in turn reflections of an individual point of view. Opinions of "those who participated" are preferred to observations of on-lookers. Businessmen are "struggling with might and main to rationalize business, to control its disorderliness, and to make their decisions stick." Reformers on the other hand "describe the era by innuendo if not by direct assertion, as one crawling with corruption," a view which "stems from the human tendency in defeat to cry foul play."

This point of view issues in judgments running counter to many received opinions. Kirkland regards as false or unproven assertions that competition declined, that the rich got richer and the poor got poorer, that unbridled

materialism reigned, that corruption was the rule of the day. These charges, not without influence today, are characterized as the exaggerations of reformers such as ex-journalist Henry Demarest Lloyd whose *Wealth Against Commonwealth* was a "fantasy."

Kirkland's conclusions are always his own. Impressively supported by contemporary quotations, they are frequently startling, most often interesting, and almost always worthy of serious attention. His skillful dissection of the classics of reform (Bellamy, Lloyd, and George) and his analysis of their popularity are useful antidotes to frequent uncritical acceptance. His demonstration that reformers and labor leaders shared fundamental values with the businessmen they castigated is a significant contribution. His characterization of cities as "the new generative factor" in the U.S. economy of the late nineteenth century is the key to one of the finest chapters.

Although Kirkland is sparing in his use of statistical data and economical in his presentation of event and organization, this follows from his choice of another approach, another style. Footnotes and bibliography provide those interested in pursuing detailed fact with plentiful material.

Industry Comes of Age is a personal book. Personal because of the materials it employs, and personal because it is so uniquely Edward Kirkland's. On both counts, it is an interesting and important work.

J. WILLIAM FREDRICKSON

North Park College

The Birth of Western Economy: Economic Aspects of the Dark Ages. By ROBERT LATOUCHE. New York: Barnes & Noble Inc., 1961. Pp. xviii, 341. \$7.50.

Although this book deals with a remote period of history, it is of greater relevance to current issues than one would suspect from the title. Instead of exploring the prerequisites of economic growth, it deals with the phenomenon of economic decline and shows what happens when the levers of command fall into the hands of barbarians unable to operate a complex economic system. The machine soon stalls with the result that both output and standard of living suffer a catastrophic setback. This is what happened in the Dark Ages and is occurring again in certain areas of Africa where there is a lack of personnel trained to assume command either in government or in business. Although history never repeats itself, similar conditions are bound to produce similar results. The distressing fact is that humanity does not learn from the lessons of history.

Latouche rejects Pirenne's thesis according to which the Saracen conquest of North Africa and Spain, rather than the barbarian invasions, destroyed the unity of the Mediterranean world and led to the breakdown of Roman civilization. Neither does he adopt the views of Alfred Dopsch, who contends that there was no decline, because the German tribes had reached an advanced stage of civilization when they settled within the Roman empire. In Latouche's opinion, there was gradual deterioration which had already started before the German invasions and received from them a new impetus. Under the inefficient rule of the Merovingians, conditions went from bad to

worse; town life went into an eclipse, roads fell into disrepair, trade shrank in volume, currency was steadily debased, and taxes ceased to be collected, with the result that the king had to live on the product of his own estates. The reign of Charlemagne was only "a temporary restoration" followed by a new succession of upheavals and catastrophes.

It is regrettable that Latouche deliberately excludes any discussion of Italy, which, he claims, deserves a separate study. Nevertheless, this gap detracts from the value of the book as a synthesis on the rebirth of western Europe. The revival of trade and the resurgence of town life occurred in Italy earlier than in Germany or France. Some even argue that there was no breach of continuity. This may be true in certain cases—Pavia and Lucca, for example—and not in others: Venice was a new settlement and Ostia was wiped off the map. Rome itself never recovered from the sack of 455 and the popes lived for centuries surrounded by the ruins of imperial Rome.

The author is well aware of the controversial character of his subject. No statistical data of any sort are available and textual, archeological, and numismatic evidence has given rise to widely varying interpretations. One of the main merits of the book is that the author cautiously refrains from speculation and does not build an attractive hypothesis based on the shaky foundation of inadequate evidence. History does not rest on assumptions but on facts.

RAYMOND DE ROOVER

Brooklyn College

Equilibrium and Growth in the World Economy. By RAGNAR NURKSE. Edited by Gottfried Haberler and Robert M. Stern, with an introduction by Gottfried Haberler. Cambridge: Harvard University Press, 1961. Pp. xiii, 380. \$7.50.

Ragnar Nurkse published only one book in English under his name during his lifetime, the famous *Problems of Capital Formation in Underdeveloped Countries*. His many articles were widely scattered throughout several countries and languages, some of them in journals or symposia that do not come automatically into the hands of all members of the profession. Economists whose interests did not coincide closely with Nurkse's could easily have failed to appreciate the quantity and quality of Nurkse's contribution to economic thought. The collection of essays under review is therefore particularly welcome because it affords easier access to Nurkse's ideas. By the same token it heightens the sense of loss to the profession through so early a death of a man with so keen and original a mind, so rare a talent for blending history, statistics, and theory into a meaningful whole.

Collections of essays are usually difficult to review, since they seldom carry a connected theme that can be isolated for special comment. The present volume is no exception to the rule. The essays selected concentrate mainly on investment, trade and economic development, but they cover a wide range of facts and analysis. The reviewer's chief reaction to the two prewar essays, which reflect Nurkse's Vienna training and the then current interest in the Austrian theory of capital, was "thank God we are through

with that." Even here, however, Nurkse managed to display his independence of thought. He insists (as the reviewer did much later) that cycles and trends have to be analyzed together, and also contends that the structure of production is an important aspect of the business cycle even though the "linear" structure envisaged by the Austrians must be rejected.

The first "Keynesian" essay also seems rather dated, with its defense of Keynesian economics against accusations of nationalism and its discussion of "Stabilisation Fund vs. Clearings Union" proposals and of the proposed charter of the International Trade Organization. The following chapter is also concerned with the system implicit in the Bretton Woods agreements and the proposed ITO, but takes on more permanent interest from Nurkse's defense of a buffer stocks scheme for commodity stabilization and his suggestion for countercyclical timing of foreign investment. His "New Look at the Dollar Problem" (1953) warns against regarding the closing of the dollar gap as a return to "fundamental equilibrium," applies the "demonstration effect" concept to the whole of United States trade, and expresses his preference for capital exports over Harrod's proposal for a higher price of gold.

Chapter 6 is devoted to "Period Analysis and Inventory Cycles." It makes one wish that Nurkse had written more on economic fluctuations. This essay is the second longest in the book and much too tightly reasoned to be dissected. In any case it is rather unrelated to the other essays in the volume.

The remaining essays, more than half the book, were all written between 1956 and Nurkse's death, and are all concerned with investment, trade, and economic growth. The first of this integrated group of articles demonstrates the uniqueness of nineteenth-century investment experience, and the impossibility of using it as a guide for investment policy in the twentieth. If the United States were to devote the same proportion of her national income to foreign investment, net capital exports would range from \$12 to \$20 billion annually—"almost absurdly large" figures. The investment went to "regions of recent settlement," totally different from the underdeveloped countries of today. Today capital flows must be a substitute for, rather than a complement of, international movements of people. Most of the United Kingdom's investment went into social overhead capital, especially railways. In contrast to U.S. foreign direct investment, which creates economic and social dualism, U.K. investment was of a portfolio nature and much of it went to governments. Nurkse ends this chapter with a plea for generous foreign aid.

Chapter 8 is the longest in the book—70 pages—and is devoted to the British balance of payments problem in the decade following the Second World War. It is the "right" kind of economic history, selecting and marshalling facts to fit into a clearly defined analytical framework. He makes telling use of the simple $\text{Exports} - \text{Imports} = \text{Income} - \text{Expenditures}$ formula, and demonstrates that external imbalance reflects excessive internal expenditure—not, as Harrod would have it, excessive investment. Devaluation is a cure for imbalance only if it brings a sufficient cut in domestic spending, which it may not do. The best cure for external imbalance is a highly de-

veloped and currently expanding economy. He makes the astute observation that statistically falling capital-output ratios may not reflect "declining importance of capital," but rather fuller employment of labor and fuller utilization of social overhead capital.

Nurkse's "Reflections on India's Development Plan" (1957) is the most disappointing chapter in the book. It is really a review article based on Vakil and Brahmanand's *Planning for an Expanding Economy* (which has been much more astutely reviewed by William Malenbaum [*Jour. Pol. Econ.*, Oct. 1957, 65, 453]); it is slight and betrays a lack of genuine "feel" for the Indian situation.

Most readers, I suspect, will find the last two chapters most interesting: *Balanced and Unbalanced Growth* (1957) and the Wicksell lectures on *Patterns of Trade and Development* (1959). There is much in these chapters that pleases the reviewer. Development policy cannot be simply an optimal adaptation to existing conditions, including existing factor-proportions; it is not easy to say whether capital or labor is more scarce in underdeveloped countries; the balanced-growth doctrine "is an exercise with unlimited supplies of capital"; balanced growth is related to the classical law of markets—supply creates its own demand if supply is properly distributed among different commodities; it is essential to distinguish between marketable surplus and investable surplus of the farm sector; development of import-replacing industries does not mean autarchy; expanding social overhead capital in advance of needs makes good sense, but carries with it the danger of "Hayekian" crises and creates special needs for capital which are not being fully met by the World Bank and Eximbank. Nurkse's afterthoughts on balanced growth are also of great interest. The notion, he says, is confined to the sphere of directly productive investment, and does not apply to social overhead capital. It is in any case necessary only if export demand is not sufficiently expanding. It is important to distinguish balanced growth as a method and as a goal; even zigzag growth must have balance as an ultimate aim.

In the Wicksell lectures Nurkse returns to his theme of the contrast between nineteenth century and mid-twentieth century patterns of trade, and quotes once again the Marshall dictum, "the causes which determine the economic progress of nations belong to the study of international trade," a phrase of which Nurkse seemed very fond. Once again he underlines the differences between the U.S. position in world markets today and that of the United Kingdom a century ago. He explains why foreign trade is no longer a reliable "engine of growth," and makes the case for development with output "diversified in accordance with domestic elasticities of demand so as to provide markets for each other locally."

The reviewer can find little with which to quarrel in this volume. Nurkse argues (p. 263) that social overhead facilities should be able to pay their way eventually or "there has been a waste of resources." Why? May not marginal cost equal price at a point where average cost is below price? His description of agriculture in underdeveloped countries as "conservative, sometimes feudal, always tradition-bound, passive and noncapitalist" hardly fits

rubber, copra, sugar, tobacco, tea and coffee plantations in the countries the reviewer knows best. But these are quibbles. Taken as a whole this book is a splendid monument to a distinguished economist.

BENJAMIN HIGGINS

University of Texas

Ensayos sobre desarrollo económico. By NICHOLAS KALDOR. Mexico: CEMLA (Center of Latin American Monetary Studies), 1961. Pp. 134.

This small book contains a series of lectures on economic development delivered at the Center of Latin American Monetary Studies in Mexico City in the summer of 1960. The topics of the lectures were: theories of economic growth; policies of economic development; inflation and economic development; taxation and economic development. As may be expected from Kaldor there are in each chapter interesting findings which invite comments.

In the two lectures dealing with theories of economic growth Kaldor stresses the importance of technical dynamism for economic development and concludes that the most important factor determining the rhythm of economic growth is the capacity of an economy to absorb technical change. He believes that the neoclassical school assigns excessive importance to poverty, to lack of natural resources. The author feels that in every underdeveloped country adequate economic policies could lead to accumulation of capital and to technical dynamism.

The views expressed by Kaldor in these chapters are almost identical with those contained in his recently published *Essays on Economic Stability and Growth* (Part III) where the author's lectures at Milan (1954), Peking (1956), and an article from the *Economic Journal* (December 1957) were reproduced. There he wrote: "... the prime mover in the process of economic growth is the readiness to absorb technical change combined with the willingness to invest capital in business ventures" (p. 270).

With regard to the undeveloped countries Kaldor maintains that the real, critical problem is a low rate of dynamism in certain key sectors of the economy which handicaps the growth of the more dynamic sectors. While in principle agreeing with his views one might suggest a comparison of the rate of growth of two countries, both enjoying technical dynamism but differing greatly in resources endowment. Would the rate of growth not be faster in the better endowed country, and furthermore, would not a more prominent role be assigned to capital accumulation when development has reached a more advanced stage?

In discussing policies for promoting economic development the author points out that sustained progress requires various complementary sectors to grow in a certain harmony. Undoubtedly industrial expansion will be limited unless there is an adequate expansion of agricultural production. As one cannot expect that spontaneous forces will secure an adequate rate of sustained growth Kaldor recommends the following government programs: secure an ample supply of social capital, particularly in education; promote increased productivity in agriculture, along with, if necessary, agrarian reform; stimulate, through government-owned or mixed enterprises, the estab-

lishment of basic industries (steel, cement, machine building) or industries with good export prospects. The author suggests that such industries should be expanded at a disproportionate rate to make possible a satisfactory rate of balanced expansion at a later stage.

These recommendations are suitable for the majority of underdeveloped nations except for the emphasis on development with unbalanced growth. Kaldor in a somewhat qualified manner has joined the growing number of economists who favor this type of development. This reviewer believes that more studies are necessary before a general conclusion may be warranted. Recent developments in some Latin American countries appear to support the author's opinion. However, the same cannot be said of experiences in Pakistan and Burma where industrialization was pushed ahead without proper attention to agriculture. A thorough scrutiny of the second five-year plan in India must also be made before assessing the favorable and unfavorable effects of unbalanced growth in India during this period when agriculture did not nearly keep pace with industrial expansion.

Very interesting is Kaldor's discussion concerning the positive and negative effects of inflation as a source of financing development. One can agree with him that in certain circumstances progress initiated by inflation is preferable to stagnation, and also that inflation as an instrument promoting economic development should be compared with other methods available to achieve the same objectives. The author examines the two phases of inflation. During the first phase profits rise more than wages and other costs, and thus accumulation of capital is accelerated except when conspicuous consumption increases greatly; in the second stage the situation is reversed and stable conditions can hardly be established without deflation and unemployment. Brazil is cited as an example of inflation where the investment-boom phase was maintained successfully, as against Chile where inflation resulted in a reduction of the gross rate of investment. Studies in some other countries not mentioned by Kaldor show that huge profits made expansion of industries possible, but because of inadequate increase of wages and salaries the market for newly manufactured goods lagged behind production.

Kaldor concludes that as a whole fiscal policy is much superior to inflation as an instrument for mobilization of resources for development. He makes a good point in saying that even the most stagnant underdeveloped countries have unused saving potential which is much greater than the real saving and which if mobilized would suffice to support higher rates of economic progress. However, how long will it take to change people's habits of investing in jewelry and of engaging in disproportionate spending on weddings, funerals, and similar occasions? According to the author fiscal policy should make a revenue surplus possible which would be available for investment. This could be achieved through a system of progressive personal taxation administered by an elite corps of civil servants paid as well as businessmen are.

The author refers to India (and Ceylon) as countries which introduced tax reforms suggested by him, but all taxes which were introduced on Kaldor's recommendation in India (the expenditure tax, annual wealth tax, and gift tax) yielded only about two per cent of the rp.6500 mil. of tax revenue of the

Central Government. The annual accumulation of the provident funds amounted to more than six times the sum of receipts from the three new taxes. Furthermore no revenue surplus was generated in India which could help finance investment.

The trend of public expenditures was not properly assessed by Kaldor. While substantially higher amounts of personal taxes could without doubt be collected, particularly in many Latin American countries, government expenditures in the developing countries have shown a steady upward trend which will continue for some time. A country-by-country analysis might show where a revenue surplus could be established, at what stage of development, with what prospect of continuing for a number of years, on the assumption that current expenditures needed for development are met from revenue.

In discussing sources of financing Kaldor deals with retained earnings (self-financing), expansion of bank credit (including inflation), and revenue surplus. Not mentioned are savings accumulated at financial institutions which are available for investment. Yet transferred savings have been playing a major role in a number of countries with contractual saving growing faster than voluntary saving. Latin America would not be—with a few exceptions—a good example to illustrate the growing role of this source of funds for investment.

As indicated in this review a number of interesting issues are discussed in Kaldor's book which should stimulate further research and discussion.

ANTONIN BASCH

University of Michigan

Technique of Planning for Accelerated Economic Growth of Underdeveloped Countries. By S. S. WAGLE. Bombay, India: Vora & Co., 1961. Pp. 296. Rs 12.

The high level of theoretical analysis in this work is a credit not only to the writer but to the training he received at Harvard and Bombay universities, both of which awarded him a Ph.D. degree. The approach is that of contemporary welfare economics, all alternatives of economic development being subjected to the test of social costs versus social benefits.

Mr. Wagle demonstrates that the microeconomic approach in terms of profit maximization and an equilibrium allocation of resources will not produce optimum growth in underdeveloped economies. Producers and consumers are not distinctly separated from each other, since production for self-consumption is dominant and factors of production are not substitutable for each other at increasing rates. Indivisibilities and market imperfections intervene, returns to scale increase in the initial organization of basic industries, and income distribution is even more skewed than in advanced economies. Planning by government is essential.

Private marginal productivity of capital is lower than social marginal productivity, the author notes, and public investment may produce external economies and raise the marginal efficiency of capital for private investors.

Most of the significant recent contributions of economists to development

theory have been well tied together here in an integrated theory that should be of service to both planners and economic analysts. The author considers the optimum rate of investment, how the necessary savings can be obtained, resource mobilization, how to accelerate capital formation, the relation of productivity to wage and other factor payments, the problem of sectoral balance, and location of industries in varying orientations to resources and markets. Especially suggestive is the treatment of choice of project and technique, where social costs and benefits are carefully computed in some detail. More capital-intensive techniques should be employed, the author says, when variable costs form a substantial part of the average cost of output, and more labor-intensive techniques should be used when overhead costs are high, especially "in case of projects which may be termed as social overheads of economic development."

The book concludes with a discussion of the problem of regulation and control of prices. Noting the divergence between demand and supply that is an inevitable consequence of any capital-deepening process of growth, Mr. Wagle suggests that "price controls should precede wage controls in the initial stages." Rationing of necessities must supplement price controls, he says; and he demonstrates with indifference curves why he finds rationing superior from a welfare point of view to indirect taxation, which in turn is better than income taxation. Generalizing from Soviet experience, he concludes that "the usual wage functions of organized trade unions are steadily taken over by state authorities in order to regulate economic incentives for accelerating capital formation."

The style and editing of the book are somewhat uneven but it is always possible to discern the theory through the rhetoric.

ROLAND GIBSON

Washington College

Teorija privrednog razvoja u socializmu. (The Theory of Economic Development Under Socialism.) By RADMILA STOJANOVIC. Belgrade: University of Belgrade Press, 1960. Pp. 321.

Historians of economic thought will consider it important that the University of Belgrade has adopted this text. It contains a critical review of both Western and Soviet literature; particular emphasis is given to the concept of "model," and to the symbolic formulation of the content of the model; and the notion is developed that the precise numerical values assigned to the parameters of a model may be as important as the selection of the parameters. The distinction between "Marxist" and "bourgeois" is made, but since the author is Yugoslav and not Soviet he can imply that within either category some work is better than other.

From this distance, it is not easy to state whether the technical simplicity of the treatment is due to the level of preparation of Yugoslav students; or whether the need to equate precisely the relatively simple econometrics of the Soviet bloc with the relative complexity of the Harrod-Domar model precludes the more intensive exploration of what is implied by the various models. If the latter is true, much more interesting work will become possible

if Kantorovich and his Soviet followers are allowed to publish in the future.

In any case, this book illustrates most interestingly the perennial problem of intellectual development: does it reflect the need for Yugoslav economics to solve analytical problems, which are the result of human thought and thus cross national boundaries and even the Iron Curtain; or does it reflect the Yugoslav balance of payments, in which contributions from Washington and Moscow must be carefully equated and apportioned? It is too bad that language difficulties will keep it from being more accessible to a wider group of the profession in the United States.

EDWARD AMES

Purdue University

Canadian Economic Policy. By T. N. BREWIS, H. E. ENGLISH, ANTHONY SCOTT, and PAULIN JEWITT, with a statistical appendix by J. E. GANDER. Toronto: The Macmillan Company of Canada, Ltd., 1961. Pp. xv, 365. \$6.50.

This book is designed to provide a comprehensive review of Canadian government policy in major economic fields since the 1930's and to explain how ordinary economic theories help guide policy-making in a free enterprise economy.

The work is divided into four sections. Part I, Resource Allocation and Government Policy, is concerned with the current pattern of resource allocation, the longer-run problem of economic growth, and the impact of government policy on the use of resources. The examination begins with the general principle that the consumer is "King," and that the price system in a competitive economy tends to serve his best interest by assuring the most efficient use of resources. From here the reader is guided through the deviations from this ideal situation, where degrees of competitiveness vary, and where supply and demand conditions are altered by government decisions. The authors then consider appropriate government policy to reduce this gap between ideal and actual, with specific reference to Canadian legislation. Consideration is also given to public ownership and various types of regulation of the "natural" monopolies.

In addition, capital formation is discussed in relation to economic growth. The sources of funds available for capital expenditures and the factors which tend to influence their supply are discussed. Individual saving is compared with cooperate saving and government allocation for capital expenditures. Some concepts of "ideal" growth rates and the effects of certain government policies on these rates are considered.

The second part, Economic Stability and Government Policy, reviews postwar changes in policies and techniques to stabilize the economy. The authors begin with a discussion of the changing concepts of monetary, fiscal and employment policies by considering the influence of Keynes in the development, during the 1930's, of the concept of a "compensatory" budget and a "cheap money" policy to assure high levels of employment. Many of these financial policies were continued during the Second World War and

were carried forward by the Canadian government into the postwar period. The gradual return to more orthodox financial policies—more flexible monetary policies and a “stabilizing” budget policy—grew out of the experience during the postwar period both in and outside Canada.

The changing techniques of monetary controls during the past decade are also discussed. These include the use of moral suasion in the form of voluntary agreements between the central bank and commercial banks (such as the use of a liquidity as well as a cash reserve ratio), and the introduction of a “fluctuating” exchange rate and a “fluctuating” discount rate. Other financial techniques to permit more flexible countercyclical policies are also introduced, such as government mortgage lending activities. Moreover, various techniques of economic forecasting are examined, including the advantages and shortfalls of each and the consequent difficulties in determining appropriate policy measures.

Section III shifts to a discussion of Economic Welfare and International Aspects of Policy. The theoretical difficulties of determining the welfare aspects of certain policy goals and possible conflicts among various objectives are considered.

On the international aspects of Canadian policy, the book surveys developments which led to current Canadian views on trade and foreign capital movements, and to policy decisions in these fields. The authors trace the changing conditions which were responsible for the increasing reliance upon U.S. markets for Canadian exports over the past 30 years, and the resultant sensitivity of the Canadian economy to both economic fluctuations in this country and the large flows of capital from the United States. The composition of Canada's exports and imports and the problems which Canadians face as a result of a comparative advantage in raw material and agricultural goods are also discussed here.

The fourth section on Policy Formation deals with the political and administrative aspects of Canadian policy-making. It includes a discussion of the division of power and responsibility between the federal and provincial governments, a historical survey of the trend toward stronger federal powers, and a discussion of how policy-making takes place in Canada and how the economic and political interests of various geographic regions and economic groups are reconciled in policy formulation.

From the contents and arrangement of the book it is difficult to determine what group of readers the authors intended to reach. There is a lack of symmetry in the treatment given to the subject matter in the various sections of the book, which seems to reflect differing aims of the various writers. The trained economist will find some parts of the work overly concentrated on a general review of elementary economic theory. Moreover, the reader who wishes a review and understanding of Canadian policy developments will find the book somewhat lacking in documentation.

Perhaps the book will prove most useful in providing the student of Canadian economics with a description of Canadian economic policy developments. It will also provide him with a discussion of the interrelations of

economic theory and the making of policy decisions over a wide range of economic activities. The work throws light on the problems and conflicts involved in establishing policy goals.

EDWIN A. ANDERSON

*Board of Governors of the
Federal Reserve System*

Saving in India. New Delhi: National Council of Applied Economic Research, 1961. Pp. xii, 188. \$3.00.

This monograph is a valuable contribution to the research on recent economic development in India. Its primary purpose is "to arrive at the best possible estimates of saving that originate in different sectors of the economy, identify the components of saving for each sector and investigate the pattern of their utilization." The economy is divided in three major sectors: individuals' saving, corporate saving, and government saving. The Council's estimates of aggregate saving are the most comprehensive of all available but as mentioned in the study they are "still subject to a number of significant deficiencies."

The study covers the period 1948/49 to 1957/58 but lack of information for the early years necessitated interpolation of data. In the last year reviewed the total net national saving based on direct estimates amounted to U.S. \$2,250 million. The amount for the five years 1953/54 to 1957/58 totaled U.S. \$9,586 million in 1952/53 prices. Of this amount individual saving represented 82.2 per cent, government saving 13.6 per cent, and corporate saving 3.5 per cent. Thus more than four fifths of saving originated in the individuals' sector while the proportion of the corporate sector was surprisingly small. The individuals' sector comprises all types of households, farms and non-farm unincorporated enterprises engaged in manufacturing and other business enterprises. The savings in the sector are both personal and business savings.

It is obvious that the monograph suffers from lack of data in many fields. Considering that perhaps more than one-third of the Indian economy is nonmonetized, any estimate at this stage cannot but be very approximate. This applies particularly to saving in physical assets which accounted for about 60 per cent of the individuals' sector saving.

It was easier to collect information on saving in financial assets especially on savings accumulated at financial institutions including provident and pension funds and life insurance. Annual savings at financial institutions increased from U.S. \$152 million in 1948/49 to about U.S. \$500 million in 1957/58, of which contractual savings represented more than two-fifths. The largest single source of savings is now funds accumulated at provident funds.

The study does not deal with the problem of freely transferable savings which are very important for the flexibility of the national economy. In the estimate of this reviewer not more than one-third of the total increase in savings at financial institutions can be considered fully transferable. All the rest is reserved for use in the public sector.

Great ingenuity was displayed in getting estimates of non-financial saving in the individuals' sector. Among the many practical limitations the lack of statistical information separating business from personal accounts should be mentioned. Useful estimates could be obtained only for building construction, noncorporate business assets, farm investment, and some items of transport equipment. Many components of this large sector had to be omitted. It can be assumed that various gaps will be filled once the urban and rural saving surveys now being prepared by the National Council are completed. In spite of statistical and other limitations some of the features of saving in the sector are worth mentioning. Investment in rural and particularly in urban construction accounted for more than 60 per cent of the individuals' sector saving. The estimates on this type of investment are based largely on data on consumption of cement and steel.

The position is much better with regard to information on saving in the government and corporate sector. The government sector is divided into the administrative departments and the commercial enterprises. Net saving in this sector was obtained from a surplus in commercial enterprises. Contrary to the planners' expectations hardly any surplus on revenue accounts emerged. The estimate of saving in the corporate sector is based on a combined balance sheet covering the core of the sector. Net savings in this sector were small throughout the period and very small in the nonfinancial corporate sector. On the average the percentage of retained earnings of profits after taxes was only about 30 per cent and thus only a small proportion of new net investment could be financed from this source. This sector supplied only about 3 per cent of net national saving which is less than its share of the national income.

The study concludes that the national saving-income ratio rose from about 6 per cent in the period 1948/49 to 1950/51 to 7-8 per cent during the five years of the first five-year plan, and to 9-10 per cent during the first two years of the second plan. The higher figures were derived from the national accounts' indirect estimate of total saving. These figures fit rather well into the assumptions of the five-year plans. The authors estimate also the propensity to save though well aware that these estimates are conjectural for a number of reasons. They arrive at a figure of at least 20 per cent, which was the target of the second plan. This reviewer believes this figure to be too high and requiring additional scrutiny. It should be noted that gross saving in the individuals' sector was substantially higher than its gross investment so that this sector provided a surplus available for financing of investment in the other sectors.

It may be hoped that the National Council, which has started its work so well, will be able to expand the statistical coverage, to improve on the methods used, and to produce estimates somewhat less exposed to a wide margin of error. Yet despite all difficulties the study has achieved its primary objective and supplies a kind of rough x-ray of the pattern of saving and investment in India which can be helpful to the planners in India and elsewhere. The findings provide good evidence that even in countries with a very

low per capita income saving and consequently investment can be stepped up to a large extent and within a rather short period of time.

ANTONIN BASCH

University of Michigan

Social and Economic Frontiers in Latin America. By HARRY STARK. Dubuque, Iowa: Wm. C. Brown Co., 1961. Pp. xx, 421. \$7.25.

This book is rather hard to classify. It is written in a popular, even colloquial, style, designed to appeal to the general reader, and it has chapters on political-military organization in Latin America, Communism, and Anti-Yankeeism in Latin America; also a "case study" of Cuba. There is coverage of the main sectors of the economy (of which the balance-of-payments section is one of the best). There are 53 figures (maps and graphs) and 39 statistical tables, which bring together much useful reference material. With the exception of a few chapters, however, the topics are treated at a rather elementary level.

The preface suggests that the book is designed as a textbook for "courses in Latin American subjects." The economic analysis is not sufficiently sharply focused, however, to recommend this book for students with a sophisticated economic background.

GEORGE WYTHE

Washington, D.C.

La distribución del ingreso y el desarrollo económico de México. By IFIGENIA M. DE NAVARRETE. Mexico, D.F.: Instituto Mexicano de Investigaciones Economicas, 1960. Pp. 99. 20 pesos.

The widening scope of economic-development efforts and the importance recently given to investment in human capital, and in particular to social projects and reforms in Latin America, make books of this kind extremely valuable.

It is commendable that despite the scanty and dispersed statistics available (there are no regular national income figures prepared in Mexico), someone should attempt to analyze Mexico's income distribution in relation to its economic development; and what is more, should be willing to tackle the job single-handed. Despite a painstaking job, the book falls short of the mark in this reviewer's opinion. This is primarily due to the overwhelming odds involved in throwing light on the effects of the unequal income distribution on the economic development of Mexico.

The book consists of two parts—one is theoretical, while the second focuses on the distribution of the product by industrial origin, distributive shares, and income levels. The two parts are only loosely related to each other.

The theoretical analysis leads the author to argue that the slope of the consumption function is rather steep in spite of the inequality of income distribution, while it generates heavy imports of luxury goods. Both factors work towards a low savings ratio out of disposable income and a high propensity to import. Therefore, she argues, if the concentration of income promotes a demand for imported consumer goods rather than larger savings, a more egalitarian income distribution is a necessary condition for economic

development, i.e., it would increase the demand for domestic-made products without changes in the level of savings. The demand-pull would be an additional incentive for investment and growth.

The low savings ratio is later geared to the Harrod-Domar model in an attempt to show its depressive effect upon the growth rate. All in all, this section is faulty on several grounds and inconsistent with the available data. As could be expected, later samples have shown that the savings ratio goes up from lower to upper incomes and the import of consumption goods of all kinds accounts for a minor percentage—18 per cent—of Mexican imports. Besides, the Harrod-Domar, single-commodity, fixed-coefficients model, whatever its merits on other grounds, has considerable shortcomings when used as the basis for a theory of income distribution, which the author does not take into account. My own feeling is that the theoretical part of the book is irrelevant for the professional economists and would be confusing to the undergraduate.

The second part is a collection of data with regard to which the author carefully cautions the reader as to the dubious nature of the available statistics; e.g., profits account for 41 per cent of national income in 1950 according to one estimate and 26.7 per cent according to another. Its main findings are an increase of industrial and agricultural output and productivity, and a shifting trend from agricultural employment into industries and services. An increment is noticeable in the average income of farmers, but farm laborers were relatively worse off in 1950 than in 1940, although their number decreased from 35 to 20 per cent of the labor force. The disparity between the average incomes of entrepreneurs and independent workers and those of employees both in the agricultural and nonagricultural sectors grew larger, particularly in the case of the latter. While 20 per cent of the population in the lower-income strata deteriorated economically in relative and absolute terms from 1950 to 1957, 30 per cent of the population in that period deteriorated in relative terms, improving slightly in absolute terms. Thus the upper half improved in absolute as well as in relative terms being better off than they ever were before.

In the section that deals with the national distribution of income, which seems to me to be the best chapter of the book, cross-section samples of the Statistics Department are used. Here it is shown that Mexico City and the northern Pacific coast area with 20 per cent of the population have an income 1.8 times larger than the nation's average. The central plateau and the southern part of the country have an average income close to two-thirds the average for the nation. It would be worth while to further analyze the extent to which the country is siphoning resources to its richer regions in the way Myrdal described.

Finally, although this is a thought-provoking book, it raises more questions than it is possible to answer, given the present development of Mexican statistics; and while the author offers well-grounded opinions, she mingles these with value judgments, giving the impression that she has not delved into the subject deeply enough.

LEOPOLDO SOLIS

Mexico City

The Philippines: Public Policy and National Economic Development. By F. H. GOLAY. Ithaca: Cornell University Press, 1961. Pp. xv, 455. \$6.75.

This volume is the outgrowth of Dr. Golay's year of field research in the Philippines during 1955-56 under a Fulbright scholarship, as well as a Cornell Southeast Asia Program travel grant.

According to the foreword, the study "is an attempt to examine the role of public policy in postwar Philippine *national* economic development." Following an introduction that includes a brief survey of postwar economic developments in the Philippines, the analysis is organized on the basis of various facets of public policy, viz., exchange rate policy, commercial policy, industrialization policy, economic planning, etc.

While recognizing that postwar economic growth in the Philippines has been rapid, Golay is nevertheless severely critical of many Philippine economic policies under which that growth has occurred. "The Philippine Congress blithely enacts consumer price controls, personal income taxes, and land reform legislation which it has no intention of seeing enforced. Similarly, there have been a succession of more-or-less comprehensive economic plans for accelerated economic growth which have largely been ignored by the policy makers" (p. 408). Further, Golay laments the harshness of the emerging Philippine economic organization. "Income and wealth are concentrated, political power is closely correlated with wealth, and welfare goals are assigned low priority" (p. 408).

Golay guardedly forecasts continued economic growth in the Philippines. He observes that: "The unity of the political elites has been permanently destroyed" (p. 415); Philippine society is becoming increasingly sophisticated (college students account for a higher proportion of the population in the Philippines than in any other of the less developed countries); a middle class is emerging as a result of increased internal migration, urbanization, and economic growth; specialized economic institutions, such as common stock mutual funds, life insurance, social security, postal savings, rural banks, and rural credit cooperatives, nurture economic growth; foreign savings, particularly those supplied by the United States, will continue to assist in promoting economic development; Philippine commercial policy is becoming increasingly "normalized," i.e., monopoly windfalls arising out of import restrictions are increasingly being diverted to the government; and the Philippine economy gives promise of remaining stable, in part due to the diminished importance of foreign trade.

The principal factors that will limit Philippine growth, Golay feels, stem from the unnecessarily low levels of foreign exchange earnings; the rapid rate of population growth (about 3 per cent annually); the unlikelihood that industrialization will expand sufficiently to keep pace with the annual addition to the labor force; and the low marginal propensity of Filipino society to save.

Golay discusses two other factors that bear on Philippine economic growth: the conspicuous concentration of wealth and the role of the Roman Catholic Church. He takes issue with those who feel that the concentration of wealth augurs well for promoting economic development; he observes that the Philip-

pine Congress shows no willingness to employ either wealth or agricultural income as a significant tax base, and that the landed gentry are strongly disinclined to shift from their tradition-bound role of rent receivers into entrepreneurs or dividend receivers. Golay feels that the concentration of wealth is likely to be a neutral factor in the economic development of the Philippines. The Catholic Church, he observes, has no "single unified church policy with regard to the more earthy details of political, social, and economic life" (p. 422). He feels that the elements of the church that are identified with the *status quo* will obstruct material progress, whereas other elements—notably the Jesuit order—"represent a potent force for evolutionary change" (p. 422). On balance, Golay is of the opinion that the church will play only a passive role in Philippine economic development.

Golay also calls attention to serious social problems that tend to resist alleviation through economic growth, such as the concentration of wealth and the substantial failure of the rural and urban proletariat to benefit from economic development. He feels that to deal with such problems, "Land reform, preferably with a substantial element of expropriation, is warranted on grounds of equity" (p. 423), and that the Philippine fiscal system needs overhauling. He believes also that the Philippines should (but probably will not) provide for the social and economic assimilation of aliens, notably the Chinese, in a manner that will subordinate emotion to reason.

Golay concludes that "changes favorable to further economic growth . . . should be assessed as favorable" (p. 426) but "The ultimate outcome of Philippine development is not particularly promising as population growth will ultimately press upon available resources" (p. 427).

The book is to be recommended primarily to those who are already familiar with basic Philippine problems but wish to have an up-to-date appraisal by a competent field researcher. With most of Golay's views, few objective analysts, particularly in the United States, will quarrel. Perhaps, however, he has attached too much importance to fiscal matters, particularly the exchange rate problem.

Golay has surveyed many facets of the Philippine scene and has assembled a great deal of information. Not the least of his contributions is an excellent "Bibliographic Essay." His book is not easy reading, however, largely because of excessive detail, much repetition (only partly due to the functional organization of the material), and too much statistical data interspersed in the text.

BEN DORFMAN

Washington, D.C.

SSSR-S.Sh.A. (*Tsifry i fakty*). (USSR-U.S. Figures and Facts.) By A. G. AGANBEGUAN, T. A. ARTAMONOV, YA. A. IOFFE and YU. M. SHEYNIN. Moscow: State Publishing House for Political Literature, 1961. Pp. 133.

The book under review consists of six parts: (1) general information; (2) basic stages of the economic contest; (3) industrial production; (4) agricultural production; (5) standards of workers; and (6) education and science. It is devoted to a popular theme in the Soviet Union, concerning economic competition between the USSR and the United States.

In this book there are many inaccuracies and distortions. For example, the tempo of increase in industrial production in the USSR is exaggerated, and for the United States it is underestimated. Actually, productivity of labor in agriculture in the USSR is more than three times lower than in the United States. The statement that the USSR has outstripped the United States in 1957 in production of animal fats and in 1959 in the production of milk does not correspond to the facts. Average per capita living space in the United States is more than twice that in the USSR. Many other misinterpretations and errors are found in the book.

The major theme of the book may be condensed into one statement: By 1970, and maybe earlier, the USSR will outstrip the U.S. in per capita production and in the level of real income (pp. 26, 89).

This statement has to be approached separately from the point of view of the Soviet consumer and the Soviet military potential. In the reviewer's opinion, the Soviet Union will never be able to provide its citizens with a standard of living comparable to that in the United States. One of the most important reasons for this is that the criteria in the two countries are completely different. Two illustrations will suffice. In the United States nearly every family today has either a private home or a separate apartment. The Soviet government has promised every family a small state-owned apartment with an average of 86 square feet of living space per person by the end of 1965. Although this means, at best, two persons per room, it is only a promise, and there is overwhelming evidence that this plan will not be fulfilled.

It is well known that an automobile is an important part of the U.S. living standard; in fact, almost every family in the United States has at least one car. The Soviet government has promised its citizens public transportation in sufficient quantity in 20 years, albeit free of charge. In fact, the same picture may be seen in other branches of Soviet public service. It is extremely significant that, 43 years after the revolution, the Soviet worker still spends 75 per cent of his income on food and consumer goods, as compared to 37 per cent in the United States (p. 93).

But there are other aspects of the competition between the two countries in which the balance is not nearly as favorable for the United States. Measured in GNP, or industrial production, the Soviet growth rate is twice that of the United States, although the effect of this on the Soviet citizen is negligible. Because of the military significance of certain types of production, the Soviet government undoubtedly can expect the fulfillment, and in some cases the overfulfillment, of their production plans for steel, petroleum, gas, electric power, cement, machine tools, etc. Often, the excessive emphasis that is placed on how far the Soviet Union is behind the United States in the production of cars, washing machines, refrigerators, tends to carry over to an underestimate of the Soviet military capability. This completely ignores the basically military nature of the Soviet economic system.

Now, after the establishment of control commissions with extraordinary powers to deal with false economic reporting by managers in agriculture and industry, underestimation of Soviet production becomes even more likely. Indeed, the fact of the degradation and punishment of hundreds of persons last

year for deliberately distorting and falsifying statistical data, gives the analyst the false impression that all Soviet published statistics are false. This is not the case, because Soviet statistical data are, generally speaking, trustworthy; frequently, however, their interpretation is either unscholarly or tendentious.

The book under review contains much statistical data on many branches of the Soviet economy and should be of interest to all specialists on the Soviet Union. The reader who is not familiar with Soviet statistical practices, however, should be wary of much of the data and careful in drawing his conclusions.

T. SOSNOVY

The Library of Congress

Le plan septennal soviétique: études et documents. Cahiers de l'Institut de Science Économique Appliquée, No. 107 (supplément), Série G, no. 10. Paris: I.S.E.A., 1960. Pp. 367.

Recently a delegation of French economists visited the State Planning Committee of the Soviet Union and, after some begging, the Russians presented the French with a valuable souvenir: a complete set of blank forms of the current seven-year plan of the USSR (1959-1965) as well as the official instructions on how to fill them out. These documents appear in translation in the *Cahiers* under review. Though empty of statistics, the forms and instructions furnish a comprehensive and dependable view of the current methodology of Soviet economic planning.

Some features strike the reader at once. For example, almost the whole plan is drawn in kind, not in money. Out of more than 200 tables, the two or three drawn in value terms are the ultimate over-all balance sheets, superimposed upon the skeleton of physical and technical targets. It is hardly plausible that a truly economic optimum can exist in such a structure. Moreover, there is no evidence in the instructions that anyone even thought to take such an optimum into consideration.

Another noteworthy feature of the seven-year plan is the fact that defense expenditures and output as well as such projects as the rockets to the moon are not part of it. This means that, as before, the planning of defense economics is separated from the national economic plans and is not under the Gosplan's jurisdiction. This separation is an important factor that contributes to the disproportionate development of selected sectors of the Soviet economy.

The French collection of the seven-year plan documents is accompanied by two explanatory articles. Basile Kerblay has written a general survey of Soviet planning methods and has compared the present collection of forms with a similar one which the Russians published in 1936. It must be mentioned here that another official collection of similar forms and instructions was also published in 1937 and is available at least in the library of Columbia University. A systematic comparative study of these planning documents may yield an interesting dissertation.

Héni Chamber has contributed a revealing discussion of Soviet regional and local planning within the framework of the seven-year plan. Some basic forms of this type of planning are included in the present collection. This is

a novel subject not only for Western students of Soviet economics but also for the Soviet planners themselves.

Our libraries must acquire this issue of the *Cahiers* for their Soviet collections.

VSEVOLOD HOLUBNYCHY

Columbia University

Economic Development, Analysis and Case Studies. By ADAMANTIOS PEPELASSIS, LEON MEARS and IRMA ADELMAN. New York: Harper & Brothers, 1961. Pp. viii, 620. \$8.50.

The title of this book leads one to expect more than is found. It is no doubt a good idea to provide a number of cases studies and analysis for an avowedly undergraduate textbook in economic development, but the lack of a strong organizing principle, a theoretical structure or, at the least, greater unity is a serious defect in this attempt. The authors, it is true, state that a loose-structured book was their intention. Moreover, the authors have planned two books: one, an undergraduate text which is the work under review, and a second, a theoretical book for graduate students to be published later. This first book is made up of two discrete elements: Part I, 6 chapters on "the key determinants of economic development," i.e., natural resources, human resources, capital accumulation, technology, entrepreneurship and socio-cultural factors; Part II, 12 case studies written by two of the principal authors and ten other people. Of the chapters in Part I, Pepelasis wrote two-thirds with Mears writing the chapters on human resources and sociological factors. The third author, Mrs. Adelman, seems to have done the editing, though originally she was supposed to have written a theoretical section, which idea was dropped in favor of the second book still to come.

While this absence of theoretical structure in an undergraduate textbook may be acceptable to some economists, this reviewer feels that the typical upper-division text in this field should have more body and unity. Certainly texts currently in use, like those of Lewis and Higgins, give the student much more structure to take home. In the usual course, such case studies are typically contributed by student papers obviously with much less expertise than in these 400 pages, but having the merit of requiring the students' digging out of data themselves. To a certain extent, students should benefit from a demonstration effect, but this seems hardly to balance the loss of vital material of a systematic nature. At the very least some of these case studies could have been dropped to have made way for materials of higher marginal utility. This lack of balance, which could have been remedied with relative ease, seems to be a critical central defect of the book.

Thus the classical theory of economic development, the Marxist model, Schumpeter, Hansen and others are all conspicuous either in total absence or with some minor reference to a part of their theories. The celebrated Harrod-Domar model is not found in Part I nor cited in the author or subject index. Moreover the whole area of policy—"what to do" questions, so dear to the heart of the undergraduate, particularly if he is from an underdeveloped country—receives no independent identity, only implicit treatment in the

"determinants" chapters or mention in some case studies. For example, foreign aid is barely touched on in the capital chapter.

The second major criticism is an unevenness of treatment which pervades the book. Not only does the work suffer from the unevenness of content and style which is the *bête noire* of most multi-authored works, but within the chapters, there is uneven allocation of space to technicalities at the expense of larger issues. Thus investment criteria receive 9 pages of imbricated materials from technical articles while the issue of "big push versus unbalanced growth" receives only 3 pages before it gets mixed up with "planning versus free-markets" (not separately captioned). This unevenness is intensified in the case studies where each author seems to have written any way he pleases because, according to the five-page introduction to the case studies, students "will be compensated for the inevitable loss in unity by being confronted with a more realistic picture of the diversity of situations faced by countries attempting development." Perhaps so; but this reviewer suspects that the student will simply be confused by the sprawling scene.

The third critical weakness in the book is the lack of analysis as applied to the case studies. Little or no forward or backward linkage is used to relate the two parts of the book which stand in splendid isolation. It would seem that the authors at least could have devised some criteria of what to include and in what order, so that the reader could make cross-comparisons. It is true that the case studies themselves appear to have been done with some competence, but much of their materials appear dated. Mexico's indexes come up only thorough 1956. The India study includes virtually no indexes and its discussion comes up through the middle of the second plan with nothing on third-plan horizons. The great modern underpinning of India's third-plan investment by consortium foreign aid is totally missed. Perhaps such stale data is unavoidable in a composite work with inevitable publishing lags, but it detracts very much from a work where the case studies are not buttressed by more analysis.

On the positive side, there are included some hard-to-find, unusual cases like Uganda, Belgian Congo, Yugoslavia and New Zealand (the latter by the distinguished scholar, J. B. Condliffe) and the bibliographies are helpful. All in all, in spite of the above weakness, the book is a useful addition to the literature in the economic development field.

DANIEL L. SPENCER

Howard University

Economic Systems; Planning and Reform; Cooperation

Das sowjetische Wirtschaftssystem und Karl Marx. By GÜNTHER WAGENLEHNER. Cologne-Berlin: Kiepenheuer & Witsch, 1960. Pp. 354. DM 15.80.

The stated purpose of this book is to compare Soviet economic theory and practice, as depicted in the USSR Academy of Sciences' undergraduate textbook, *Political Economy*, with Karl Marx's *Capital* and thus establish "to what extent Soviet socialism differs from Marx's capitalism." By taking an extremely superficial view of both, the writer has arrived at the conclusion

that such a difference does not exist. Were it not for this unfathomed attitude, the book might have been of great interest. We lack as yet a thorough, scientific account of the relationship between Marxian and Soviet economics, even though we all seem to agree that such a relationship exists and that it is in many ways decisive.

Wagenlehner's message is scarcely different from what is habitually written in popular propaganda monthlies on this subject. Without quoting *Capital* in any way to substantiate his contentions, the author argues that the designers of the Soviet economic system not only learned their economics from *Capital*, but have also applied *Capital* in Soviet practice. While there undoubtedly is a grain of truth in this observation, the book would have contributed more if it had explained why Soviet economists maintain that some elements in their system are capitalistic "only in form, rather than in essence."

Wagenlehner lays his heaviest stress upon his discovery that Soviet economic theory admits that total product in the USSR can be broken down into Marx's $c + v + s$ categories. He thinks that the presence of s —that is, surplus product or surplus value—is especially revealing of something implicitly hideous, and that it proves beyond any doubt that the exploitation of labor is widely practiced in the USSR. He obviously disregards the fact that, to Marx, the existence of s was a normal thing and a necessity under all socio-economic systems, and that it alone and by itself cannot be adduced as proof of exploitation. Although it is true that Marx the politician and moralist occasionally condemned all of s as such, and sometimes indiscriminately called exploitation even the cases when the rate of s increased as a result of the introduction of new technology, Marx the economist always cherished his own proposition that s was prerequisite to all progress and accordingly saw true exploitation not in the production of s , but in its distribution; and that, specifically, only in that portion of s which was not reinvested to increase employment, production, and tangible wealth of society as a whole, but was wasted instead on unproductive, luxurious consumption of the rich.

It may, indeed, be interesting to establish whether or not labor exploitation in the Marxian sense exists in the USSR. But Wagenlehner's book has not proven its existence. To prove his hypothesis, it would be necessary (a) to study the relative incomes of the different classes of the Soviet population in different territories per unit of equal time worked (complex and skilled labor reduced to simple labor by some formula with the costs of training as weights); (b) compare the income differentials with similar relative income distributions under capitalism, if only to check for trends; and (c) to analyze the actual end-uses of s in the national income and compare them with Marx's dictum that, under his socialism, s was supposed to be used to reduce the income differentials and to augment the working people's living standards at least as fast as the rate of growth of their labor productivity. Presently, it is mainly the fact that the Soviet government conceals the income statistics of its population that provides ground for Wagenlehner's hypothesis to be held by many.

VSEVOLOD HOLUBNYCHY

Columbia University

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

Interesse, moneta e credito. By BRUNO JOSSA. Pubblicazioni della Facoltà Giuridica dell'Università di Napoli, No. 46. Naples: Editrice Jovene, 1960. Pp. xii, 343. L. 3,500.

This essay, by a young economist of the University of Naples, is, in my view, a valuable work of criticism and exposition, contributing several significant original ideas (or at least ideas never so clearly formulated), but marred—again, in my view—by several rather curious errors. It is certainly worthy of careful study by students of monetary and interest theory.

Jossa's approach to the problem of interest theory is perhaps less ambitious than that of Conard,¹ but it has essentially similar aims, and reaches in some respects similar results. Jossa is less interested than Conard in following up every aspect of the subject; instead he concentrates attention on particular aspects that most concern him, with only casual and therefore sometimes inadequate treatment of other aspects of interest theory. His purposes are to bridge two gaps in interest theory: first, the gap between the "real" theories of interest (long run, flexible wages and prices, full employment) and the monetary theories (short run, rigid wages and prices, variable real income), and in the process to criticize both and reformulate them into a more general analysis; and second, the gap between interest theory and banking theory. He makes useful contributions in both respects.

In a brief review it is impossible to comment on more than a few points, and there are many that are worthy of comment, both commendatory and critical, in a work so closely reasoned, and which ranges so widely over a vast and controversial literature. After a short introduction summarizing the present state of interest theory, the author builds systematically a "real" theory, for an economy with perfectly flexible wages and prices, without loans and without banks; he then introduces money (rained from heaven) and credit (loans); next, he assumes rigid wages and variable real output. What seems to me his more useful and original contribution comes (in Chapter 7) when he then introduces the commercial banking system, which—rather than heaven—supplies much of our money, and assesses the banks' role in interest determination, both with flexible and rigid wages. The work closes with two chapters which criticize, in the light of his previous analysis, classical "real" theories and the monetary theories (in both liquidity-preference and loanable-funds forms) as these have been expounded by numerous authors. An appendix deals with efforts to reconcile loanable-funds and liquidity-preference theories.

The first major defect, in my view, is the way in which Jossa introduces the demand for money in his system. It exists, he first suggests, because of uncertainty regarding the sequence and timing of inpayments and outpayments, thus failing to recognize that, even with certainty, the very use of money as a medium of payments requires the holding of transactions balances. His

¹ J. W. Conard, *Introduction to the Theory of Interest*, Berkeley, University of California Press, 1959.

initial demand for money (which he properly suggests is interest-elastic) is, in my view, to be called a precautionary demand, although he later seems to identify it as a transactions demand. Rather casually, he subsequently introduces what he calls a "precautionary and speculative demand," but fails, I think, to see or at least to expound the real heart of the Keynesian contribution as being a speculative demand for money associated with the existence of a loan market and a stock of bonds. Thus he repeatedly asserts (at least until the banks are introduced) that the existence of bonds makes little difference. For Keynes, and in my judgment correctly, the very existence of a bond market makes all the difference, because it provides a new kind of wealth-holding medium which differs from money in having a yield, and from capital goods in that its (money) yield is certain. The peculiar market characteristics of this third form introduce a systematically disturbing element (attempted hoarding and dishoarding through attempted conversions of bonds for cash and vice versa) which prevents the market rate of interest from doing its job of stabilizing aggregate demand from consumption and investment spending. Jossa does not, in his later treatment, ignore speculation; but I feel that he fails to present its true significance in the Keynesian scheme.

In the course of his treatment of the Keynesian system, Jossa attempts to expand the famous Hicksian apparatus of SI and LM curves by adding a third curve, TT ("T" for *titoli di credito*—i.e., bonds). I will not go into my problems with this device, because the issues are complex and because I am not sure whether I want to say that the new curve is superfluous, formally wrong, or merely highly confusing.

The theoretical substance of the problem centers, however, on Jossa's treatment of the demand for money. Jossa wants to say that a change in the demand for money (including a movement along a schedule) can be at the expense or benefit of the demand for consumer goods, the demand for capital goods, or the demand for bonds, with different results in each case. The traditional Keynesian treatment prefers to say that if an increased demand for money is at the expense of the demand for consumer goods, two things have happened—an upward shift in the demand for money and a downward shift in the consumption function. It is certainly true that these two things can happen together, but there is no necessary reason why they should. At a given level of income one can well become more apprehensive about bond prices and wish to become more liquid, without any change in one's demand for consumer goods. Vice versa, one can decide to save more without changing his demand for money. (However, see third paragraph below.)

One can certainly think of capital goods (or inventories) as an alternative to money as a form of wealth-holding. An increased demand for money might, therefore, accompany a decreased demand for inventories or capital goods. For example, suppose that entrepreneurs expect falling goods prices. They may then wish to hold smaller inventories. But why should they wish to hold more barren *money* (Keynesian theory suggests) unless they also expect bond prices to fall (interest rates to rise)? Thus the traditional Keynesian treatment prefers to recognize that, although the investment function and the demand for money function can (and sometimes do) shift together, this should

be treated as two changes rather than one. If we follow this treatment, then it is not only formally correct but perhaps more illuminating to identify, as Keynes did, the demand for money as the reverse of the demand for bonds, in effect treating this pair of variables as one.

What Keynesian theory as usually expounded fails to do, however, is to recognize that it is not just the stock of money, but also the stock of bonds which is relevant, for the sum of these, plus equity in capital goods, is the total wealth of the community. Thus, it does make a difference, as Jossa so clearly emphasizes, whether new money enters the system in exchange for bonds (as through the activities of the central or the commercial banks), as rain from heaven (that convenient expository device), or through government financing of a current deficit.

Further, there is the important point, whose significance Jossa sees and builds into his system, that the demand for money may well be a function, *ceteris paribus*, of the amount of saving. This is not a new point (I recall it first in an article of Arthur Smithies more than twenty years ago, and it has reappeared in various guises since), but it is a good point and needs to be built into the theory.

Armed with this apparatus, Jossa usefully builds the commercial banking system into his macroeconomic models, and shows what follows from this. He tends, perhaps, to overstress the difference this makes for prediction of the effect of various parameter shifts; but this can be forgiven when illustrious forebearers have invariably done the same.

I think that I would argue that most of Jossa's insights are more relevant in a growth context than in the stationary equilibrium which seems most to concern him. With growth, and not necessarily *proportional* growth, of the various relevant stocks (capital goods, bonds, equities, money, total wealth), the effects which Jossa stresses assume particular relevance, and it is in this context that these problems have so far received particular treatment. Likewise, in the growth context, Gurley and Shaw, whose work Jossa does not review, have attempted to incorporate not only the commercial banks but also other financial intermediaries into the system, suggesting some illuminating hypotheses.

There is much more to criticize and to commend in this useful work (including much extremely rigorous criticism of previous work), but space permits me only to repeat that I believe this essay will greatly repay careful study.

The usefulness of the study would be much increased by an index, at least of names of authors cited.

GARDNER ACKLEY

University of Michigan

The American Financial System: Markets and Institutions. By JAMES B. LUDTKE. Boston: Allyn and Bacon, 1961. Pp. xii, 685. \$7.75.

In the preface to his book James B. Ludtke states that the "book is an outgrowth of considerable experience in the development of a financial institutions course, and it is designed to serve as a text in money and banking courses as

well as in financial institutions courses." The book is a massive (685 pages) tome, well written, with evidences of considerable recourse to technical literature instead of mere rehashing of other texts, and thorough treatment of all the institutional aspects of the U.S. financial system. Thus, I believe that Ludtke has succeeded in writing an excellent text that should compete successfully in the market for texts in courses on financial institutions. However, the predominantly descriptive nature of the work, with virtually no treatment of monetary theory or the theory of income determination, and only slightly greater attention to issues of monetary and fiscal policy both past and present, make me unwilling to agree to Ludtke's claim that he has written a text for courses in money and banking. Most of the texts in that field are not the answer to a teacher's prayer, and do not describe the U.S. financial system as exhaustively as this text, but they are far better balanced in their coverage. A teacher who wishes to stress theoretical aspects will find texts of the type of Chandler or Day and Beza much more to his liking. One who believes in giving his students a thorough grounding in the institutional framework of the U.S. financial system can do this with a text like Steiner, Shapiro, and Solomon, without having to sacrifice the theoretical and policy aspects of the subject.

The American Financial System uses the flow-of-funds approach as the key to its organization. After a brief introductory chapter, it deals very briefly with various types of national economic accounts and gives an interesting comparison of the flow-of-funds approach and other major approaches. The next three chapters deal with monetary standards, currency, and demand deposits, and cover in about 50 pages the range of material (money, commercial banking, banking history, etc.) which generally constitute a significant portion of other texts in the field.

The next 17 chapters (about 460 pages or almost 70 per cent of the book) cover four major sectors in flow-of-funds accounts: consumer and nonprofit organization sector, nonfinancial business sectors, government sectors, and rest-of-the-world sector, and the financial markets in which they interact. These chapters are well done and serve as an admirable introduction to the various financial institutions and instruments.

There is no separate section dealing specifically with the commercial banking and monetary authorities sector and the nonbank financial sectors of the flow-of-funds accounts. Instead, the discussion of these institutions is found in the chapters dealing with currency and demand deposits or in chapters dealing with the other four sectors.

The last section deals with national economic objectives and monetary and debt management measures. I found the chapter on objectives and the section dealing with techniques of debt management particularly praiseworthy and more informative than comparable treatments in other texts. The treatment is generally descriptive rather than prescriptive. When policy conclusions are advanced, they usually reflect the position taken by the Federal Reserve Board, e.g., no controls are now needed over financial intermediaries.

The analytical rationale behind the flow-of-funds accounts is clearly stated in the Federal Reserve's discussion of the accounts. "Developments and de-

cisions in the financial sphere of the economy and developments and decisions with respect to income, production, and the markets for goods and services are interdependent and mutually determining. Liquidity position, portfolio composition, credit availability, and changes in each are reflected in markets for goods and services and thereby in the changing total and composition of spending and output; at the same time, changes in income, prices, expenditures, and output influence savings and investment decisions, borrowing and liquidity needs, and thus flows through financial channels."¹

The interaction of monetary and real phenomena within the same system of accounts and the relatively greater degree of disaggregation than is usually found in national income accounts should make the flow-of-funds a powerful analytical tool. Unfortunately, the author has not exploited its possibilities.

There are some minor criticisms of specific points. In the discussion of relative yields on bonds and common stocks, the author talks as if dividends were the major determinant of the level of common stock prices. He states, for example, "In some instances, the *dividend income* would have to increase at a phenomenal rate to justify the high market price of some stocks" (p. 582, emphasis added). Investors are now generally looking at total profits and their trend, rather than merely at that part of profits which happens to be disbursed as dividends. In the otherwise excellent discussion of national economic objectives, the omission of the problem of balance-of-payments equilibrium is not permissible at the present stage of U.S. economic history.

In his discussion of saving and investment, the author accepts the flow-of-funds definitions which, by including purchases of consumer durable goods in both gross savings and investment, make the consumer and nonprofit sector appear as the predominant supplier of saving and contributor to investment. The apparent contradiction between this and the generally held notion that the business sector accounts for the major share of gross saving and investment is not pointed out or explained. I suppose I am showing my puritanical streak, but I find it difficult to accept the idea that purchases of consumer durables constitute savings and investment, despite the fact that they give off a stream of services over a long period of time. The connection between investment and economic growth is made very tenuous by lumping business investment and purchases of consumer durables under investment.

EGON NEUBERGER

The RAND Corporation

¹ "A Quarterly Presentation of Flow of Funds, Saving, and Investment," *Fed. Res. Bull.*, August 1959, p. 829.

Public Finance; Fiscal Policy

Fiscal Theory and Political Economy: Selected Essays. By JAMES M. BUCHANAN. Chapel Hill: University of North Carolina Press, 1960. Pp. 197. \$5.00.

This is a useful and welcome set of essays. They "... represent various efforts, made over a ten-year period, to note some of the limitations in orthodox thinking on fiscal theory, to raise what appear to be some of the relevant

questions, and to explore some of the challenging issues that arise in this field of study" (pp. 3-4). Buchanan's interest has been drawn especially to the area of methodology, and these essays exhibit it clearly. Their range is wide, although they hang together in their common concern with an attempt to specify a general framework for fiscal analysis. They fall into three categories.

The first two essays are concerned with the pure theory of government finance. The first is so labeled, while the second, appearing in English for the first time substantially recast from its original Italian version, examines at some length the Italian literature on fiscal theory. The next three studies investigate "the process of collective choice under the individualistic assumptions about the state." They represent a critique of welfare economics in general and of recent contributions to the analysis of social choice in particular. Their titles suggest their content: "Social Choice, Democracy, and Free Markets," "Individual Choice in Voting and the Market," and "Positive Economics, Welfare Economics, and Political Economy." The last three papers deal with the methodology of tax analysis—incidence theory, the excess-burden argument, and the problem of equity in a system of federalism.

The thrust of Buchanan's argument is that traditional fiscal theory suffers from two serious defects: (1) Governmental fiscal activities are treated as if they were divorced from the decision-making activities of private groups, except as taxes may impinge on these decisions directly. (2) Even so limited, fiscal analysis has too often used particular-equilibrium tools of analysis, rather than taking the more relevant general-equilibrium approach. These criticisms may not seem startling at the present time. Examination of the expenditure side of the government fisc has been increasingly carried out in recent years, and the application of general-equilibrium analysis to fiscal theory has become much more common. Yet, this shift in emphasis is due, at least in part, to Buchanan's work. Since the points he makes are important ones, it is difficult to overemphasize them.

Of the eight essays, the three that appear for the first time can be most usefully commented on in this review. Buchanan's critical review of incidence theory is a model of careful and judicious appraisal of the debate between Rolph, Musgrave, Due, and others on excise and sales taxes. One can certainly agree with Buchanan's desire to separate tax incidence from the incidence of monetary policy—to treat it as a problem of relative pricing. One can also applaud his view that a tax must impose a real burden or be functionally useless. Yet, he accepts the proposition that a general excise tax falls on factor incomes in a fashion similar to an income tax and attributes it to Rolph and Brown. Rolph himself has stated very clearly that his analysis is based on *given* factor supplies and zero saving, and that when these assumptions are relaxed, factor incomes after tax may not be proportionately reduced by a general excise tax. Such a tax can then alter factor supplies and factor rewards in a way that *may* make the result substantially different from that of a general income tax. Buchanan's conclusion is too strong that "there seems to be widespread agreement that the Brown-Rolph conclusions concerning the incidence of a completely general excise tax are correct" (p. 139). Buchanan must have a number of empirical relationships in mind when he adds: "Journalists

and politicians need to learn that the difference between a general excise tax, or a whole set of partial excises, and a proportional income tax is slight indeed." This may be true of the fixed-factor case, but one should be careful not to base policy judgments on such a limited set of assumptions.

The essay entitled "Comparative Tax Analysis and Economic Methodology" deals with the excess-burden argument of indirect taxes. Buchanan's results generally agree with those of Rolph, Break, Little, and Friedman. But I had difficulty with the first part of the essay in which he attempts to establish the proposition that an excise tax of yield equal to that of an income tax will reduce the consumption (production) possibilities open to the private sector by more than the income tax. Since this conclusion rests on the usual simplifying assumptions, this excess burden is over and above the usual excess welfare burden. I was not convinced by his analysis, and cannot, in brief compass, disentangle my differences. He works with a production-possibility schedule under conditions of diminishing returns. If his is a general theorem, it should hold under conditions of constant returns, but does not. I suspect, therefore, he is throwing into the analysis the change in the marginal rate of substitution that results in the new excise-tax equilibrium. Moreover, he finds a difference in result when the government taxes its own purchases from that when they are exempt. This seems to me a dubious point of distinction on which analysis should turn, since the real tax yield from the private sector remains unchanged in both cases.

Finally, a word on the longest essay—that on the development of fiscal theory in Italian economics. This is an important exegesis of the Italian literature replete with references and a general bibliographical note at the end. Buchanan is favorably impressed by their approach, but also points up its weaknesses. In contrast with the Anglo-Saxon tradition they have framed fiscal theory in a more general economic model, recognizing its interdependence with the private sector. Problems of collective choice, almost wholly ignored in our tradition, have received much attention and discussion. But he also finds their tradition as lacking in a reforming spirit or guided by the desire for problem-solving.

This significant set of essays will find its way into the required reading lists of graduate courses in fiscal theory. Buchanan is a careful scholar who argues his position cogently. He has the imagination to be unorthodox, not for purposes of effect, but only when his examination of the orthodox view finds it inadequate to deal with the problem at hand. His position is marked out by careful and deep thought. Disagreement forces the reader to grapple with fundamental issues, and in the process he becomes a wiser man.

E. CARY BROWN

Massachusetts Institute of Technology

The Ideologies of Taxation. By LOUIS EISENSTEIN. New York: The Ronald Press Co., 1961. Pp. vii, 263. \$5.00.

This is an admirable little book from many points of view. The style is lively and the content is solid. The documentation is thorough and scholarly.

Eisenstein starts with the simple proposition that our people are divided

into economic interest groups and that each of these groups tries to pay as little in taxes as it can get away with, so to speak. In its effort to get away with a small share of the tax burden, each group develops an ideology of taxation by way of defending its position. The purpose of the ideology is not to state facts but to obtain action in the desired direction.

Eisenstein distinguishes three main ideologies of taxation: (1) "ability to pay," (2) "barriers and deterrents," and (3) "equity."

In the main, poor people (and intellectuals) propound the ideology of ability to pay and urge the use of steeply progressive personal and corporate income taxes. These people are very numerous and thus have some political influence.

Well-to-do people promote the ideology of barriers and deterrents, to the effect that progressive taxation of income will destroy both the willingness and the ability of wealthy people to save and invest, and thus the economy will topple down in ruins. These people are less numerous than the poor but their average per capita political influence is much higher. They get exceptions in the tax laws made in their favor. Prominent among such exceptions are the preferential treatment of capital gains, depletion allowances, income splitting, and accelerated depreciation.

Once such exceptions are made, the proponents of equity find other cases which are in some respect similar to the excepted cases and urge the expansion of the exceptions to cover these similar cases. The advocates of equity are pretty much the same people as those who promoted the exceptions in the first place.

Eisenstein demonstrates beyond any reasonable doubt that all of these groups of people disregard unpleasant facts and are woefully inconsistent; but, as he points out repeatedly, such disregard and inconsistency are not to be held against them too much. Their purpose is not to be factual and consistent but to be effective in getting action favorable to their position.

As noted above, most of the proponents of the ideology of barriers and deterrents, as Eisenstein has observed them, are of the feeling that the *critical* shortage in our economy is the shortage of willingness and ability to invest. There is the opposing point of view that our *critical* shortage is the shortage of good customers to buy what we are already capable of producing. We undertake to resolve this difference of opinion (or feeling) by political processes. The outcome is in some degree a compromise, but the friends of investment generally prevail. Eisenstein makes this quite clear.

It is perhaps to be regretted that the author does not recognize the ideology of "benefits received." My own observations have indicated that this ideology is held by a very large proportion of our people. It is true, however, that it is probably applied to state and local taxes to a much greater degree than to federal taxes; and Eisenstein is obviously much more concerned with federal income taxes than with any other kind. But we still have many millions of people in this country whose strongest feeling concerning taxes is that the government should sell its services in the market, so to speak, and thus that taxes should constitute the purchase price of services rendered by the government, with as much consumer sovereignty as possible.

The ideology of ability to pay presumably has some significant relationship to property taxes as well as to income taxes, but the author makes no mention of property taxes in this connection.

More might have been said about the incidence of the federal corporate income tax. After all, any ideology of taxation should be more concerned about the ultimate burden of taxes than about their first impact. There is much confused thinking (or feeling) at present concerning the shiftability of the corporate income tax.

Everybody who is interested in taxes—and all of us should be, of course—should read this book, even if the sarcasm and the irony become a little wearing at times.

TROY J. CAULEY

Indiana University

Public Finance. By EARL R. ROLPH and GEORGE F. BREAK. New York: The Ronald Press Co., 1961. Pp. viii, 586. \$7.50.

To satisfy minimal contemporary requirements for a textbook in public finance is not an easy assignment. The volume must cover in depth and scope a set of topics—including institutional and descriptive material, history, theory, and empirical knowledge—that could be expanded into an encyclopedia. Moreover, the style should be readable and, if possible, provocative to compete with television, popular magazines, automobiles, and other diversionary influences in modern collegiate life. In this remarkably lucid volume, Professors Rolph and Break judiciously combine these required ingredients in a way that introduces public finance as an interesting and respectable branch of economics.

Oriented toward U.S. experience, with brief references to other countries, the book is in four parts. The first, covering 18 per cent of the main text, defines the subject, surveys the historical development of governmental finances, outlines the meaning of fiscal effects, explains the budgetary process and information available for administrative control and economic analysis, and offers forthrightly some value judgments useful in assessing financial policies. Part II, comprising 44 per cent of the book, examines administration, equity, and economic effects of various tax forms: personal income, spendings, net worth, corporation income, excess profits, death, sales, and commodity taxes. About 19 per cent of the volume is devoted to pricing and investment policies of government enterprise, social security, intergovernmental fiscal relations (including foreign aid and overlapping taxes), and the economics of metropolitan living in Part III. The concluding part, again about 19 per cent of the book, examines fiscal policy, including taxation, expenditures, and monetary and public debt management. At the end of each part, there are bibliographies with brief and useful comments on the content of references. Footnote citations to both early and recent research are scattered through the book.

The authors emphasize analysis of financial policies, with theory, statistical material, and description admirably proportioned to support the argument. A wide-ranging use of analytical concepts from national income accounting, microeconomic theory, aggregative theory, and monetary theory should please

good undergraduates, who often find applied economics inexplicably divorced from analysis, and the average student should have no trouble in understanding the analysis, though occasionally he may be challenged. For a one-semester course, the main text of 558 pages is short enough to permit additional reading in supplementary sources, and yet sufficiently long in content and diversity to serve, if necessary, as the only reading material.

On the whole, the analysis is careful and straightforward, and readers will obtain an increased awareness of the complexities involved in tracing the effects of fiscal policies. This reviewer liked especially the differentiation of the effects of taxes, expenditures, debt, and loan, guaranty programs; the description of information available on taxes and expenditures, and its uses in economic analysis; the discussion of economic effects of the individual and corporate income taxes; the comparison of different types of sales taxes in use; treatment of property taxation; analysis of government enterprise; and the handling of public debt management.

However, there are some unsatisfactory, even erroneous, passages which prevent this reviewer from bestowing uninhibited praise. In discussions of the burdens imposed by various fiscal policies, the relations among money burden, real burden, and shifting are often not clear—as in the treatment of personal income tax incidence (pp. 166-68), excise and sales tax incidence (pp. 290-95), and burdens of public debt expansion (pp. 548-54). Though it is refreshing to find critical analysis of the popular view that excises burden only the consumer, the emphasis is carried too far and leads to erroneous conclusions, in this reviewer's opinion. For instance, the authors' doctrine that selective excises on goods with inelastic demand generate a distribution of burden akin to that of general income or completely general sales taxes, largely because spending shifts away from nontaxed areas to the taxed and thus reduces money incomes of resource owners in nontaxed areas (pp. 290ff., 302-7), is not a correct description of incidence in long-run equilibrium. In the new equilibrium, prices of taxed goods will exceed factor cost prices by the amount of tax per unit; though adjustments to the tax may depress unit money factor costs (market prices) in nontaxed areas, the same forces will lower unit money costs in taxed areas, and by almost the same degree under the postulated conditions. The relative price structure that emerges throws, for the most part, the tax-induced real-income losses on consumers of the taxed items, as traditional theory correctly concludes. The authors' preference for examining consumption rather than saving impacts of fiscal policies is so stated as to suggest that analysis cannot meaningfully be carried out in terms of saving (pp. 180-82). This is likely to be misleading and confusing to the student who learned (correctly) in other books that income determination could be examined either from the expenditure side (consumption + investment + government) or the saving-investment equality (investment + government expenditures = private saving + net taxes).

On the whole, the editorial job of checking errors is well done, but there are a few unobtrusive slips that ought to be corrected by potential users. Employer contributions to retirement plans, but not employee contributions, are deductible from taxable income (p. 123). The table and text on page 185

apparently contain arithmetic errors on the liability from a spendings tax. Maximum effective rate of the Second World War excess profits tax was 72.8 per cent (p. 249). Some puzzling arithmetic is presented in the foreign exchange example on page 320.

Users of this volume, including those who may not agree with the authors' analysis on all points, will find it sprightly in style, forthright in judgment, perceptive in argument, and challenging in ideas. Those who teach from this book will undoubtedly find students eager to discuss and to examine problems of public finance.

CHALLIS A. HALL, JR.

Yale University

International Economics

Coexistence: Economic Challenge and Response. By HENRY G. AUBREY, with the assistance of Joel Darmstadter. Washington: National Planning Association, 1961. Pp. xiv, 324. \$5.00.

This timely study is a detailed investigation into the nature and implications of the competitive challenge to the West posed by the Sino-Soviet policy since the mid-fifties of wooing the less developed nations of the world by offers of trade and aid, by use of other economic instruments, and by an intensified propaganda campaign designed to convince these countries of the superiority of the Soviet system. The eighth and final volume in a project on the Economics of Competitive Coexistence set up in 1956 by the National Planning Association, with Dr. Aubrey serving as Director of Research, it brings together the results of the earlier country and area studies and analyzes in broad perspective the coexistence problem as a whole.

The book consists of four parts. There is a review of the needs and aspirations of the less developed countries that have provided the opening for the Communist bloc's competitive moves; an exploration of the competitive capabilities of the industrial countries of the East and West to cater to those needs through trade and aid; an evaluation of the techniques used by each side and of their economic and political impact; and an outline of the broad policy alternatives facing the West. The chief merit of the book lies in its careful organization and interpretation of a mass of statistical and factual data drawn from a wide variety of sources, and its clear articulation of the nature of the challenge faced.

The author is at his best in those chapters, covering almost half of the book, that deal with the nature and impact of the techniques and instruments of competition that have been used by the Communist bloc vis-à-vis the underdeveloped countries. By well-timed offers to make bulk purchases of excess supplies of primary products and to extend financial aid and technical assistance, by concentrating its aid and trade in key neutralist countries, by its ability to make quick decisions and to implement them speedily, by effectively combining aid and trade in single packages, by extending specially favorable loan repayment terms, by focusing on the financing of "growth-symbolic" projects, and by other such devices, the Communist bloc, despite

the relatively small amount of its aid and trade to date, has been able to exert a disproportionately large psychological-political impact on the less developed countries. Totalitarian decision-making, centralized control of resources, and state trading thus give the bloc some strategic advantages in foreign economic policy not possessed by the West. At the same time, by emphasizing its own rapid rate of growth and by challenging to outstrip the West in per capita industrial output, by playing upon prevailing anticolonial prejudices and by exploiting real or imagined economic grievances in the underdeveloped countries, and by skillful propaganda designed to downgrade the efficiency of the economic system of the West and to impute sordid motivations to its foreign economic policies, the Sino-Soviet bloc has been working with some success to convince the less developed nations that the Communist system is the only model for the rapid achievement of their national economic aspirations. While the author calls attention to some of the mistakes and failures of the bloc and to some of the special advantages possessed by the West, the dominant stress in these chapters is on the advantages on the Communist side—so much so, in fact, that one gets the impression of some degree of overstatement.

Less satisfactory and conclusive is that lengthy part of the book dealing with the present and longer-run competitive economic capabilities of the East and West for aid, trade, and economic growth. In five successive chapters, which examine the problem from the viewpoint of the Communist bloc, Western Europe, the United States, Japan, and the Free World as a whole, Aubrey compresses a good deal of useful information and makes some shrewd observations relating to growth rates, balance-of-payments trends and economic developments, and the factors affecting trade and aid potentials and prospects, in each of these countries and areas, without reaching many clear-cut conclusions regarding what he set out to ascertain. His essential conclusions seem to be that the decisive factor in the amount of assistance given or to be given to the underdeveloped countries is not "abstract capabilities," but the will to release resources in the light of competing claims upon those resources for domestic purposes; and that both sides could "afford" to give much more than at present without undue strain if they wanted to or had to. In any case, he says, what seems to matter most is not the absolute magnitudes of aid or trade per se but the resulting impact on the minds of the less developed countries. Do these conclusions justify the lengthy discussion?

The policy conclusions are disappointingly brief and general, although it is stated that the purpose is not to make concrete recommendations. Contending that the West's policy towards competitive coexistence has thus far been largely reactive rather than initiating, the author argues that the challenge should be met by greater cohesion and cooperation among the leading countries of the Free World, and by more flexibility and adaptation in policy, in helping not only each other but also the underdeveloped countries to raise their living standards within a democratic framework. Attention is called to some of the desirable areas for cooperation, e.g., in assuring more stable markets for primary-product exports and in enlarging the flow of foreign aid,

and to some of the institutional mechanisms through which it might be made more effective. But Aubrey's main point here seems to be that a more positive long-run Western foreign economic policy—looking beyond the competitive challenge and worthy of pursuit even in its absence—is called for in place of the present negative focus on defence and military objectives. More specifically, world economic development should be recognized as a primary objective of our policy and aid should be given for the sake of development as such, not for competitive reasons. Apart from its favorable psychological impact on the minds of the recipient countries, such a policy, according to the author, would break the vicious circle of bloc initiative and overly reactive response on our part.

There is some overlapping of material in the various chapters, an unnecessary amount of repetition, and a measure of obscurity in some of the arguments and conclusions. But none of this detracts from the fact that Aubrey's study is a stimulating piece of work and an important contribution to the political economy of competitive coexistence.

ARTHUR I. BLOOMFIELD

University of Pennsylvania

Business Organization; Managerial Economics; Marketing; Accounting

The Theory and Measurement of Business Income. By EDGAR O. EDWARDS and PHILIP W. BELL. Berkeley: University of California Press, 1961. Pp. xv, 323. \$7.50.

The methods developed by these authors for reporting the income and financial condition of a business in more meaningful terms but without eliminating the traditional income statement and balance sheet give a basis for a significant advance in the techniques for accounting reporting. This advance would bring accounting more in line with economic thinking and if adopted would ultimately, I think, bring economic thinking on profit maximization more in line with measurable concepts of profit.

The authors construct several concepts of profits which are measurable in the objective accounting sense and are related in a simple way to profit as currently reported under the most orthodox accounting procedures. One of these concepts denominated "real business profit" is presented as a close approach to, or at least a good proxy variable for, what the authors' consider the dominant economic concept of profit.

Part II presents the procedure for developing six interrelated but significantly different concepts of profit. These concepts may be developed from the usual bookkeeping data by means of end-of-period adjustments that are not unduly complex. The six concepts of profit and the appropriate balance sheets can all be presented in an integrated form that should be very useful both to management and to outside analysts. The most highly questionable adjustment, perhaps, is that based on "current costs" of fixed assets, but, granted that the difficulties involved in getting such a current cost are great,

one must also grant the validity of their argument that reports based on an informed estimate are better than reports which simply ignore the effect of changes in such current costs.

The sort of reports suggested in this volume could be so valuable to businessmen, accountants and economists that I regret the necessity for pointing out some serious shortcomings of the book.

Unfortunately the book puts its worst foot forward. Only in the third chapter does the book get onto solid ground. Highly questionable ideas that are unessential to developing the theme of the book are expounded in the first chapter in a way that seems almost designed to alienate both the economists and the accountants the book should reach. The third paragraph introduces the stationary state in one of its more extreme varieties and in subsequent pages present-day accounting procedure is adjudged to be "valid," "truthful," "correct," "accurate" only if it assumes "a situation clearly akin to the stationary state." Immediately after this almost emotional development of the dubious accusation that "accounting assumes . . .," and the proliferation of adjectives of value judgment, the same points are made adequately and acceptably in terms of their representing certain accounting conventions.

Later in the first chapter (pp. 16 ff.) the attack on the usefulness of general price level adjustments of accounting statements overreaches itself, culminating in the indefensible statement that:

if management feels that the retention of profits will serve the best interests of owners better than its disposition in the form of dividends, changes in the price level will not in themselves affect the correctness of this decision.

Part of the trouble is an assumption that there is a correct or true method of reporting and many incorrect methods whereas the issue is really one of more or less appropriate and useful definitions. Fortunately this assumption is confined to the early part of the book and does not affect the substantial contributions made later.

The discussion of subjective value and subjective profit in Chapter 2 leaves much to be desired. Although the route taken is questionable, the conclusions that subjective profit "cannot be measured objectively" and that "even its subjective measurement normally cannot be accomplished until the firm's plan of operation has already been revised" (pp. 43-44) seem to be sound and to provide a sufficient basis for development of the authors' thesis that only under an alternative definition can profit be measured objectively. But the attempt to show that maximization of the suggested alternative, realizable profit, is equivalent to maximization of subjective profit is, I believe, unsatisfactory.

At the practical level I find only one aspect of the book unsatisfactory, the obliquely suggested tax implications. By presenting examples in which it is shown that if all holding gains are taxed at the present capital gains rate, taxes are reduced, a tacit endorsement of such treatment is implied. Since the authors specifically avoid discussion of the validity of special capital gains rates for their categories of profit they should avoid any suggestion, specific or implied, that their methods reveal a case for tax-law changes which would lower the taxes of many businesses.

The bibliography is voluminous including some material of very doubtful relevance (e.g., a little piece by the reviewer) but unfortunately it omits such an important piece as J. Hirshleifer's "On the Theory of Optimal Investment Decision," *Journal of Political Economy*, August 1958.

In general, the authors make a solid contribution to the task of developing better profit concepts. The book suggests what seems to be a good framework for more useful accounting reports in spite of the fact that, in the reviewer's opinion, it fails to provide the theoretical foundation the authors seek for their concepts. The suggested methods can and should stand on their practicality and on the light which reports prepared on this basis would throw on the activities and position of a business. We can only hope that readers will by-pass the book's weaknesses and accept its practical contributions.

CALEB A. SMITH

Brown University

• **Industrial Organization; Government and Business; Industry Studies**

Workable Competition and Antitrust Policy. By GEORGE W. STOCKING. Nashville: Vanderbilt University Press, 1961. Pp. vii, 451. \$7.50.

Professor Stocking, past president of the American Economic Association and long-time student of antitrust policy, reprints in this volume ten papers originally published during the 'fifties as a prelude to the publication of his comprehensive new book, *The Evolution of Antitrust Policy*.

Because these essays are so closely related as to be variations on a single theme, I shall not attempt to review them individually. The first and last are the presidential addresses to the Southern Economic Association (in 1952) and the American Economic Association (in 1958). Of the remaining eight, five appeared in law journals, two in the *Antitrust Bulletin*, and the remaining one in the *Journal of Business* of the University of Chicago.

The major purpose which this volume serves, aside from the stated one of satisfying the many demands for reprints of the individual articles, is to illustrate the nature of the Stocking creed, to show how its neglect has led to errors of administration and policy, and to provide a simple guide to future policy. To imply, as I suspect I am doing, that Stocking is a propagandist or missionary (albeit for a cause that many will feel is both right and righteous) should not detract from the fact that he is a scholar whose reading of both legal and economic sources is comprehensive and acute. But, as Stocking says of Judge LaBuy (in criticizing his decision in the *Du Pont* case), "what the record discloses . . . depends as much upon the preconceptions of those examining the facts as on the facts themselves" (p. 323).

The Stocking preconceptions may be summarized as follows:

1. Power is abhorrent in a democratic society. Fewness of sellers—concentration—breeds market power, whereas competition restrains it. Power should be curtailed and competition fostered at every opportunity.
2. This view, clear enough to the framers of the antitrust laws has not prevented the growth of power in the form of big business, big unions and

other power blocs in our economy. This is due in large part to the fact that the clear, simple and honest insight of the Sherman Act was emasculated by the apparently plausible but actually insidious legal doctrine known as The Rule of Reason which removed oligopolistic aggregates of power that were not predatory from the scope of antitrust prosecutions.

3. Workable competition, if interpreted to focus on performance, is an equally dangerous modern doctrine and one that economists have unwisely although successfully pressed upon the courts. This doctrine has provided an institutional basis for lax administration of the antitrust laws and it has encouraged a rationalization of the *status quo* (p. 383). Workable competition is a treacherous guide to public policy when set up as a standard by which to judge an industry's performance (p. 69).

4. "The object of an appropriate performance test *should be* merely to determine whether an arrangement is consistent with competition" (p. 262). "While economists now look to effective or workable competition to regulate economic activity, *most of them* would recognize as effective only the kind of competition in which resources are allocated in response to independent decisions of rival business firms *none of which has any considerable power over the market*" (p. 195, emphasis supplied).

These essays in addition to a careful if somewhat repetitious exposition of this standpoint, survey past and present activities in various ways. (a) The evidence in a number of major antitrust cases is reviewed (steel, cellophane, tin cans, and DuPont-General Motors receive major attention) and Stocking concludes in *every* case that, by his standard, the industries were not workably competitive. The court erred, not merely because in some cases it failed to find violations of statute, but because it chose a different, more sophisticated, yardstick than "whether a combination hinders the operation of market forces." (b) Stocking reviews ten cases of trade association activities and finds the court reached the wrong decision only in the three cases where the charges were dismissed. (c) He reviews the report and recommendations of the Attorney General's Committee and finds repeatedly that they have missed the opportunity to strengthen antitrust enforcement because they fail to appreciate and adopt the Stocking position. (d) Jointly with W. F. Mueller, he reviews the practice of reciprocal buying by large corporations and concludes that (since it limits competition) it is inconsistent with workable competition.

The trouble with Stocking's essays, in my view, is that they will only persuade the persuaded. I suspect that the courts, and many—perhaps even "most"—economists, lawyers, and others interested in public policy toward industry, do not act as Stocking believes they should, not because they have failed to hear his plea, but because they do not accept it. "Determining whether an arrangement reflects or interferes with competition is not always easy, but it is easier than determining whether an arrangement that interferes with competition promotes the general welfare" (p. 70). Stocking draws comfort from this observation, others do not.

PETER O. STEINER

University of Wisconsin

The Control of Monopoly in the United Kingdom. By PAUL H. GUÉNAULT and J. M. JACKSON. New York: Longmans, Green, 1960. Pp. ix, 197. \$6.50.

The Antitrust Laws of the United States of America. By A. D. NEALE. New York: Cambridge University Press, 1960. Pp. xiii, 516. \$7.50.

Since the war the British have begun to experiment with antitrust legislation and there has, accordingly, been an upswing of interest in the United States experience. These books describe the administration of antitrust laws in the two countries and are intended for the nonspecialist British reader. They are not addressed to economists, and the authors do not undertake the economic analysis of monopoly problems, but they attempt to summarize the opinions of economists on the issues of public policy that are involved.

The British antitrust machinery was very thoroughly revised in 1956. Guénault and Jackson deal mainly with the earlier experience under the act of 1948, devoting only 21 pages to the 1956 legislation. The book is therefore mainly of historical interest.

British legislation has been based on the view that there is not a sound theoretical case against monopolistic practices, and accordingly the law should not treat them as illegal per se. Hence the legislation requires investigation into the specific circumstances of each case before the practices employed can be banned. Guénault and Jackson share the official skepticism of theoretical conclusions but argue, as Neale does also, that there is a case against restrictive practices on "empiric" grounds.

Their informative and well presented account of the British legislation and its administration brings out clearly the inadequacy of the British approach. Case-by-case investigation cannot of course do justice to the interdependent character of the economy. Nevertheless the commission sitting under the 1948 legislation concluded its cumbersome investigations with the finding that a wide range of practices were in general against the public interest and should be prohibited, with provision for exceptions in special cases. The 1956 legislation watered down this recommendation, requiring condemnation by a Restrictive Practices Court before an agreement or practice can be banned in each particular case. The authors rightly criticize the legislation as an "inadequate and hesitant approach."

Neale presents a longer and more thorough analysis of American antitrust administration. The book is one in the series Economic and Social Studies undertaken by the National Institute of Economic and Social Research in London. The emphasis is on legal and administrative problems rather than on economics, and the author has done an admirable job of distilling the "real" meaning of antitrust from the history of judicial interpretations, to which the bulk of the book is devoted. The legal bias leads to some awkwardness in the organization of the book. Readers interested in mergers, for example, will have to look in three different sections. Other topics, however, such as agreements, price discrimination, and resale price maintenance are each given a unified discussion. Economists will find in this book an excellent guide to the shifting trends in judicial thinking and interpretation.

The penultimate chapter contains a very good summary of the main

intellectual and political sources of antitrust policy, and a not-so-successful attempt to assess the "effectiveness" of the antitrust laws. The suggestion that "nobody now expects in the United States to get away with overt price agreements or any of the obvious variants such as agreements for level tendering, formula pricing and so on" seems overoptimistic in the light of recent cases.

In the final chapter the case for competition and for the suppression of anticompetitive practices is rejected on theoretical grounds but accepted on "empiric" grounds. The notion that one's own brand of arm chair theorizing is "empiric" is an amiable British foible.

G. ROSENBLUTH

*Queen's University
Kingston, Ontario*

Vertikale Preisbindung in der Markenartikelindustrie. By HERBERT HAX.
Köln and Opladen: Westdeutscher Verlag, 1961. DM18.50.

The marketing policy of vertical price agreements has been the subject of much debate here and abroad. In view of the volume of contributions made in both hemispheres one would hardly expect further amplification in this field of inquiry. Yet, it is evident that Dr. Hax has a profound knowledge of the subject and an unusual insight into the motivating *modus operandi*, coupled with the gift of original thought and vigorous expression, so that his book offers a contribution to the general line of thought. The purpose of the publication is not so much to broaden the admitted field of controversy but rather to examine the polemical discussions and to explore those which lack objective and methodical argumentation.

In general, Hax undertakes the formidable task of inquiring into the basic, impelling motives that actuate decisions designed to lead to the most profitable alternative from the producers' viewpoint, and into the impact such decisions are likely to have not only on the individual enterprise but on the total economy. The author stresses ad infinitum the importance of reaching conclusions only on the ground of socio-economic justification. The fact that 493 footnotes and references support the work indicates that a genuine effort was made to summarize and systematize arguments heretofore presented and to arrange them on comparative scale. Admittedly, however, empirical material was considered of only secondary importance in presenting the evidence.

The text is arranged in five divisions with the first chapter devoted to a 26-page introduction which deals with the definition of vertical price agreements, their impact on competitive behavior, quality guarantees, marketing efforts, and profit margins.

Part II presents by far the major portion of the work, dealing as it does with the problems of how far and for what purpose the producer can use a policy of vertical price agreements in marketing his product in an effort to extend his share of a dynamic market. Price agreements and their controversial aspects are reviewed here, especially as they pertain to the media used for distribution, profit possibilities, "formulated" marginal income

concepts, quasi-cartels, the effect of selective price concessions and alternative pricing policies. Hax concludes that the necessity for a policy of vertical price agreements as a tool against price differentials in a free marketing economy is hardly substantiated. The effect of vertical price agreements as related to competition among rival producers is also further examined in this part.

Parts III and IV consider the more specifically vertical price agreements in their relation to the trade and the consumer respectively. Regarding the former, special emphasis is given to the general uniformity of profit margins and the relationship of this uniformity to competitive distribution efforts, special problems of jobbers and wholesalers, and the purpose and enforcement possibilities of pricing agreements. Observations on black-market tactics and appeals for "bargaining" as an aspect of less refined standards of a moral society are by-products of the discussion.

Part IV explores the topic from the consumer's viewpoint; e.g., protection against excessive prices, the impact a stabilization of prices may have on the total economy.

The author summarizes his work by evaluating the data and by relating them to current German laws and regulations. As part of the concluding remarks the text reviews existing legal restrictions and comments on "price recommendations" as contrasted to "price agreements," quoting a Supreme Court (*Bundesgerichtshof*) decision that price recommendations cannot be considered different from price agreements.

The Germans have a reputation for unusual industry and thoroughness, of which this book is characteristic. The writer has done a thoughtful piece of work and, apparently, has no one-sided theories to advocate. No one interested in the subject could fail to profit from this publication. It is much more than a mere synopsis.

Its scholarly contribution to this so controversial subject merits consideration especially by those who are responsible for the formulation of restrictive legislation, and those engaged in research.

R. W. BERGNER

University of Detroit

Electric Utilities—Costs and Performance. By WILLIAM IULO. Pullman: Washington State University Press, 1961. Pp. viii, 180. \$7.50. Statistical Appendix, 82 pp., \$10.00.

The nature of this volume is indicated by its subtitle, "A Study of Inter-Utility Differences in the Unit Electric Costs of Privately Owned Electric Utilities." The study is said to have three major purposes. One purpose is "to investigate the quantitative relationships that exist among the various factors that, either by tradition or logic, are believed to affect the unit costs of providing electric energy. . . . Such information, when combined with a utility's knowledge of its own special circumstances, would be of value in such areas as the designing of sales promotion efforts and the guiding of technical

and administrative research programs" (p. 3). A second purpose is to develop a measure of the ability of the various factors, singly and in combination, to explain the variation in costs among different utilities. By comparing the actual unit costs of a utility with the sum of those unit costs which reflect factors that are relatively immune to managerial control, light is thrown on the relative efficiency of the managements of the different companies. A third purpose is to aid in improving the statistical information compiled by regulatory agencies by calling attention to the factors which are and those which are not significant in explaining the performance of the utilities.

The companies studied were privately-owned operating utilities which generated at least part of the power which they distributed to a broad range of users. Companies were excluded which generated less than 10 per cent of their total kilowatt-hour sales, or which generated over half of their power by internal combustion equipment, or which did not sell power to both residential and commercial and industrial users. The number of utility companies included was 60 per cent of all Class A and Class B electric utilities, representing 87 per cent of all kilowatt-hour sales and 93 per cent of all customers. Class A and Class B utilities in turn represent 98 per cent of the privately-owned electric utility industry on the basis of assets and revenues. In computing costs all the usual items were included, except that rate of return on capital was not included as an expense. The period covered by the analysis, which was governed by the availability of data, was 1952 to 1957 inclusive.

The author considers at length some thirty factors which might have a significant bearing upon electric utility unit costs. In order to minimize the element of personal evaluation multiple regression analysis was used to determine which of these factors actually had a significant bearing upon unit costs and to arrive at an estimate of what the unit costs of the utilities would have been if all of the factors had operated with equal force on all the utilities studied. The seven factors found to be significantly related to electric utility unit costs were: the size of the steam-electric generating stations, capacity utilization, the level of steam-electric fuel costs, the level of hydro-electric "fuel" costs (i.e., the cost of providing for water storage, analogous to the cost of providing fuel storage for steam-electric plants), distribution of the market among customer classifications, average consumption of energy per industrial and commercial user, and average consumption of energy per residential user. In combination with one another these factors, which the author classifies as relatively insensitive to managerial control in the short run, were found to account for approximately 80 per cent of the interutility differences in unit costs. It was also found that unit costs were little affected by the geographic location of the utility or by the use of hydroelectric as compared with steam power. By comparing the actual unit costs of the companies with the unit costs estimated on the basis of multiple regression analysis, using the seven factors listed above, the author is able to group the companies according to their relative efficiency. The basis of the grouping is admittedly arbitrary, about one-sixth of the companies being classed as very efficient, one sixth as inefficient, and the remainder as normally efficient. A separately-

published appendix contains details of the unit costs of the individual companies.

The reviewer is unable to pass upon the technical aspects of the statistical analysis but his impression is that the work was carefully done and that the limitations both of the analysis and of the data used were adequately recognized. In any event the study deserves recognition as a pioneering contribution to the establishment of standards of efficiency—an important and seriously neglected part of the task of public utility regulation.

ROBERT W. HARBESON

University of Illinois

The Economic Value of the United States Merchant Marine. By ALLEN R. FERGUSON, EUGENE M. LERNER, JOHN S. MCGEE, WALTER Y. OI, LEONARD A. RAPPING, and STEPHEN P. SOBOTKA. Evanston: The Transportation Center, Northwestern University, 1961. Pp. xxii, 545.

For at least three reasons, this is an interesting book. The quality of its research is high indeed; it is a fine example of fruitful, so-called "team research"; and it demonstrates that a study, requested and financed by people who no doubt hoped for findings favorable to their interests, can and will be published despite conclusions damaging to their position. Both the Transportation Center at Northwestern University and the Committee of American Steamship Lines (the financiers) deserve congratulations upon the publication of this book.

For many years, some advocates of a subsidized merchant marine for the United States have claimed that, aside from its value as the "fourth arm" of national defense, the subsidized merchant fleet makes a significant economic contribution to Americans. They have no doubt been annoyed by the summary dismissal of this contention by those who merely point to the necessity for payment of a subsidy as sufficient proof that the industry makes no economic contribution within the generally accepted meaning of that term.

Ferguson and his associates certainly cannot justifiably be accused of undue brevity or superficial analysis in their assessment of the economic value of the American-flag merchant marine, even though they confine their study primarily to the subsidized ocean liner industry and exclude the military value of the merchant marine from their definition of economic value.

At the beginning the authors point out that though there is a variety of "possible or asserted benefits" attributable to its existence, the subsidized merchant marine makes an economic contribution only if the value of its output is "greater than the value of the best alternative use of the resources used to produce that output." Since the industry is subsidized because costs exceed revenues, the merchant marine therefore makes an economic contribution only if the value of its output sufficiently exceeds that indicated by the earnings statements of the subsidized companies. Ferguson and his colleagues thoroughly search for evidence of this excess value.

In the course of their investigation the authors describe the industry and the federal maritime program, analyze the costs of shipbuilding and of vessel

operation and the impact of the differential subsidy program upon these costs, examine the competitive structure of the markets for shipping services, study the operation and rate-setting practices of shipping conferences, consider other ways of establishing rates, and estimate the effect of the reserve fleet upon shipping rates.

In a properly cautious summary statement of conclusions, the authors note:

Thus, briefly, there appears to be little net economic contribution to the United States by the subsidized liner firms or deriving from the subsidy program. The operation of the reserve fleet in mitigating shipping crisis is the only major exception to these gloomy conclusions. Their validity is, of course, subject to any imperfections in the analysis, to inadequacies of the data, and particularly to the choice of criteria.

For a program costing the federal government about \$120 million annually for operating-differential subsidies and a total (over several years) of \$1.5 billion to \$2 billion for the replacement of vessels, these are certainly "gloomy" conclusions.

The well-substantiated findings of the authors indicate that trade development activities of the industry "generate no significant economic values." They also conclude that the existence of the American-flag subsidized merchant fleet does not result in lower shipping rates, and therefore "does not make a major economic contribution as defined in this study." This leaves the depressive effect upon shipping rates occasioned by activating ships in the reserve fleet during periods of great demand for shipping services as the important economic contribution of the maritime program of the United States.

No doubt many people in the shipping industry and perhaps some students of maritime affairs will be disturbed by this study. Yet, unless they are unable, for whatever reason, to accept the authors' definition of economic contribution, the limits of their study, and their competent employment of analytical techniques, they will probably grudgingly admire the research reported in this book.

WYTZE GORTER

University of California, Los Angeles

Land Economics; Agricultural Economics; Economic Geography; Housing

Agricultural Production Functions. By EARL O. HEADY and JOHN L. DILLON. Ames: Iowa State University Press, 1961. Pp. vii, 667. \$6.95.

With problems of growth and technological change moving to the forefront of professional interest, there has been a resurgence of interest in production functions on the part of general economists. But while production-function research was out of fashion on a national level, it led a very vigorous life among agricultural economists. The volume under review, besides being a text on the theory and methodology of agricultural production-function fitting, is also an encyclopedia of previous research results in this area. As such it should prove useful to all economists interested in problems that are or can be put into a production-function framework.

There are at least two different kinds of production-function work going on, each with its own methodological problems. The first kind is the normative "engineering" approach: the economist as an advisor to a farmer or businessman is called upon to prescribe *the* "optimal" resource combination (e.g., the economically optimal level and mixture of fertilizers to be applied on a particular crop in a particular area). To do this he has to know something about the characteristics of the technical relationship but usually only over a very small section (or only for a few of the many dimensions) of the "global" production function. Unfortunately, the agronomists or engineers have rarely collected data on physical response relationships in a form suitable for economic analysis and prescription. Thus, the agricultural economist finds himself involved in designing essentially agronomic experiments to get at the necessary information for specifying what is the optimal level of nitrogen use on corn at a given corn-nitrogen price relationship. Such "physical" production functions have been estimated from various fertilizer and animal-feeding experiments and the results have been used to recommend to farmers how they should improve their practices. These results have been particularly useful in educating agronomists to appreciate the importance of price relationships.

While the first type of production-function research uses experimental data and only a few well-defined inputs (such as a specific mixture of protein feed), the second type of production-function research is descendant from the Cobb-Douglas tradition, utilizing data generated by actual economic units, and working usually with several ill-defined aggregate inputs such as "labor," "machinery," "current expense," and others. This type of production function has been used by agricultural economists to analyze the relative productivity of different resources in agriculture, to diagnose various "disequilibria," to search for evidence of economies of scale, and to prescribe "optimal" crop and input-use patterns for farms in specified areas or size classes. The data for this type of analysis have come largely from farm accounts or from special cross-sectional surveys. This type of approach has not been used often, however, as a tool of economic history, where it could be used to try to explain how and why certain things happened and how they may work out in the future. It is this latter use that has led to the general revival of interest in production functions.

The book itself deals mostly with "physical" production functions. This is as it should be, since this is the area where the agricultural economists have made their largest contribution; but it does reduce the book's interest to the general reader. The book is divided into four parts: the first 100 pages introduce the economic theory and the mathematics of production functions and their general use in economics. The next 150 pages are a small textbook in the econometrics of production-function fitting. The third and largest part of the book, close to 300 pages, brings together a large number of physical production-function studies, mainly by Iowa State economists, dealing with feed-weight gain relationships for hogs, poultry, and beef, marginal rates of substitution between forage and grain in milk production, and crop-fertilizer response "surfaces." The fourth and last part of the book, about 100 pages, discusses the estimation of cross-section farm production functions using non-

experimental data and summarizes a large number of such studies from all over the world.

The statistical methodology section of the book covers a very wide range of subjects, from the definition of variance through regression, design of experiments, confluence analysis and more, doing a good if superficial job of it in very short space. It is marred, however, by several erroneous or careless statements: There does exist a transformation to a form linear in the parameters for the multivariate logistic function—the logit transformation (p. 126); autocorrelation in the *variables* does not bias the estimated variances of the coefficients (p. 131); autocorrelation in the residuals does not lead to a bias in the coefficient estimates if everything else is all right (p. 133); it is not necessarily “desirable that the coefficient of multiple determination, R^2 , be as close to unity as possible” (p. 210). In the sections on estimating various optimal feeding formulas too much stress is put on testing the statistical “significance” of certain coefficients of the estimated production function and almost none on testing the statistical and economic “significance” of the prescriptions. What is the “standard error” of the calculated “optimum”? And even if the confidence interval around the “optimum” is quite narrow, the difference in profits between optimal and nonoptimal points on the production function may be quite small.

In general too little testing has been done of the economic conclusions of production-function fitting. Most of the research just summarizes a piece of data without testing the conclusions on new or different data. In particular, if the profit maximization hypothesis is accepted, the prescriptions are also predictions. Thus, if a particular feeding or fertilizing combination is adjudged to be optimal, we should observe farmers moving in the direction of this technique. If they don't it could be that they are ignorant or irrational but it also could be that the prescription is wrong, being based on a wrong or incomplete model. Similarly, a finding that the marginal product of labor is substantially below the going wage rate is also a prediction of occupational out-migration. None of these studies, however, follow up their prescriptions-predictions.

The basic problem in interpreting the results of nonexperimental firm production-function fitting is in the specification of the economic model that generated these data. If all firms (farms) in an area are faced with the same factor prices, have the same production function, and maximize their profits, they would all use the same combination of resources and we could not estimate a production function. Obviously, they do not all use the same resource combination, but why? Maybe they do not maximize profits, but then they don't have to be *on* their production function. Maybe they all have different production functions—but what is the sense then of estimating one production function for all of them? They could be faced actually with different prices—but then we should use this price information and estimate the structural production function from the reduced form equations (factor demand functions) with prices as exogenous variables. Alternatively, different farmers may form their expectations differently and thus wind up at different points on the production function even though the objective information is the same for all

of them. But without specifying explicitly what produces the observed data, it is impossible to draw any "structural" conclusions from nonexperimental data. It is surprising that in a book of close to 700 pages only one short paragraph is devoted to the possibility that what the book is trying to do cannot be done at all a priori, or at least cannot be done in the way it is going about it.

ZVI GRILICHES

University of Chicago

Agricultural Supply Functions—Estimating Techniques and Interpretation.

Edited by EARL O. HEADY, C. B. BAKER, HOWARD G. DISSLIN, EARL KEHRBERG, SYDNEY STANFORTH. Assembled and published under the sponsorship of the North Central Farm Management Research Committee. Ames: Iowa State University Press, 1961. Pp. viii, 305. \$3.95.

"Dedicated to the proposition that progress is made by discussing hypotheses, theories, techniques, and illustrations of their use even though some are still in their formative stages," this book is an outgrowth of a conference in January 1960. The resulting 17 papers and 16 discussions are organized into six sections: introduction; regression analysis of aggregative, time-series data; supply estimates derived from individual farm data; regional competition and spatial equilibrium models; interpretation of supply functions; and summary. The theme throughout the volume is the estimation and interpretation of the genus often referred to as statistical supply functions. This is a logical sequel to earlier preoccupation with statistical production functions.

Although the subject of some research more than three decades ago, agricultural supply has begun to receive intensive empirical investigation in recent years. There are now many advocates of the view that failure to deal with "the farm problem" in a satisfactory fashion is due in large part to a lack of knowledge concerning agricultural supply behavior and its basic determinants in our changing economy. In the lead paper in the book under review Heady states, "Directly, the major problems of American agriculture are those of supply."

The current focusing on agricultural supply is another strap in the harness used by institutionalized agriculture to bridle the beast, "the farm problem." Earlier attempts included battling the trusts, cooperative purchasing and marketing, restricting supply, relying on a healthy and growing general economy, expanding exports, and creating the so-called soil-bank.

Both the nature and the scope of research devoted to the understanding of the behavior of agricultural supply is reflected in the contents of this book. Whether the bridling is to be effective cannot be known at this stage of its development, but the dedicated and serious efforts of the authors of this book and other researchers in this area cannot be questioned. General agreement emerges as to the nature of the problems and the gaps remaining. These difficulties are mentioned to an annoyingly repetitious extent in the various papers: the complex structure of agricultural production; the lack of an adequate theory of aggregation of firm supply functions; the absence of an appropriate theory of firm behavior under uncertainty; the need for an em-

pirically useful theory of the variation of fixed and quasi-fixed factors over time; and the lack of an operational theory, with related measuring techniques, for the investigation of technological change and its impact on the operations of the firm.

But these gaps and problems are not limited to agricultural supply analysis. They also confront the general economist when he leaves the classroom and undertakes empirical research on the supply side of the firm and industry operating in our changing economy.

The shortcomings of the widely-used multiple regression estimation technique in agricultural supply analysis are also repeatedly emphasized in a number of papers in the book. Aside from the usual limitations, this method is held particularly inadequate in the handling of structural change. The dramatic alterations in the structure of agriculture in the past two decades have led the authors to emphasize this inadequacy. It might well be noted that this difficulty also is not peculiar to the analysis of agricultural production and supply. If other segments of our economy had been subjected to as much empirical investigation as has agriculture, we might well be more knowledgeable than we are of the structural complex of the economy at large.

In terms of new ideas and approaches, the volume is not strikingly productive. Two attracted this reviewer's interest: Nerlove's account of Muth's "rational expectations hypothesis," and Richard H. Day's "recursive programming." The latter is a synthesis of time-series analysis and linear-programming versions of production theory. Yet it is to new ideas and approaches that one must look for bridgeheads which may give the foundation from which to traverse the gaps in agricultural supply analysis. The conventional ideas and techniques are too blunt to probe to the heart of some of the problem-areas which the book examines. Involved are a wide range of production-supply activities from the owner-operator in a changing world of uncertainties to the chronic "surplus" situation in major agricultural crops for which we have national legislation and largely ineffective programs.

It is generally agreed that the influences stemming from technological change are among the significant determinants of longer-run agricultural supply behavior. Yet technological change reflects an accumulation of knowledge resulting from a complex of processes we do not comprehend. Halter, in his discussion of the impacts of technology, argues that because the accumulation of knowledge is a unique historical process, any hypothesis formulated to describe it cannot be tested. He concludes that "the impossibility of finding a law of technological evolution" limits prediction to the short-run and a given technological period. This is a less sanguine outlook than in most of the papers giving attention to the impacts of technology.

The essence of the book as a whole is its reflection of agreement on the major gaps and problems in supply analysis, and the present need for much more attention to the development of theory and less emphasis on measurement in agricultural supply analysis. Improved theories are a requisite for improved measurement. General economists likewise have inadequate theories for dealing effectively with technological change, aggregation, investment in

fixed factors, uncertainty and expectations. The complexities that face those working in agricultural supply analysis are no less real because they are part and parcel of the difficulties that confront all economists. But some agricultural economists, at least, are facing up to the problems by attempting to improve both theory and measurement.

SIDNEY HOOS

University of California, Berkeley

Soviet Power: Energy Resources, Production and Potentials. By JORDAN A. HODGKINS. Englewood Cliffs: Prentice-Hall, 1961. Pp. xviii, 190. \$5.25; text, \$3.95.

This little book is essentially a descriptive geography of Soviet fuel resources and production. On the basis of many Russian language sources, the author has pieced together the extent and regional location of Soviet fuel resources. The general picture that one obtains is of a country with vast fuel reserves, of which coal is predominant. Yet the locus of energy consumption is principally in European Russia while the greatest reserves, particularly of coal, are in Northern Siberia. Consequently, energy sources which are less plentiful and more costly but more accessible to the principal consumption centers are being exploited. The coal mines of the Moscow basin and the utilization of shale for fuel in Estonia are examples. Even so, coal is being transported over long distances. The rapid development of the newer energy resources, oil and natural gas, has improved this situation since their production (and *known* reserves) are closer to the centers of industry. They are, moreover, held to be advantageous from the point of view of investment cost and production cost.

A timely title sometimes exposes an author to the risk of disappointing his readers. In this case, the reader's disappointment arises out of the fact that the survey of fuel resources is nowhere related to the issue of Soviet power. The author states at the beginning that "Energy resources and their development are the key to a nation's technical and industrial capacity. . . ." While this notion is referred to occasionally later, there is no consideration of how the growth of the Soviet economy has been affected (helped or perhaps impeded) by its resource availabilities. Nor is there any evaluation of future Soviet needs for energy materials or of the expansion of energy supplies in relationship to the planned development of Soviet productive power. These are serious omissions, since projections which could serve as the basis for such analysis are made available in the Soviet seven-year plan.

The discussion is further marred by several faults. The following are some examples:

There is excessive emphasis on the implications of the resource "potential," the total power-content of all mineable fuel resources. Yet the author recognizes that much of this "potential" is located where there is neither industry nor means of transport, and has little if any relevance now or in the foreseeable future.

Given the tentative nature of any resource reserve estimates, the author

lumps together coal reserves (of which only 3 per cent are proven and the rest are probable and inferred) with "known" reserves of oil and "known" reserves of gas "in fields recently being exploited on an industrial basis." Small wonder, then, that more than 99 per cent of the "energy potential" is found to be in coal!

Soviet exports of petroleum (which are increasingly competing in world markets) are not mentioned. Indeed, the author appears to be unaware of the fact that the USSR has developed rapidly expanding exports of oil or that export pipelines from Russian oil fields to the borders of Western Europe and to the Pacific coast of Siberia are under construction.

This book serves to give a broad picture of the extent and regional distribution of fuel reserves in the USSR.

F. GERARD ADAMS

University of Pennsylvania

Labor Economics

Farm Labor in Germany 1810-1945—Its Historical Development Within the Framework of Agricultural and Social Policy. By FRIEDA WUNDERLICH. Princeton: Princeton University Press, 1961. Pp. xv, 390. \$8.50.

This book is an exceedingly careful, detailed and incisive history of the evolution of German farm labor during the nineteenth century and up to 1945. The beginning of the period is the time when serfdom was abolished in the course of the Napoleonic wars. The end of the Second World War provides a natural conclusion to the study. The author, recently retired from the New School for Social Research, is well known for her contributions in the area of German labor relations, particularly her book on the German labor courts.

The period between 1810 and 1918 is treated as a prelude to the real substance of the volume. Some 30 pages are devoted to the entire century up to 1918 while the Weimar Republic takes up 120 pages and the Hitler era no less than 140 pages. Although the 30 page summary of nineteenth century farm labor history is brilliantly written and contains most of the essentials, it is obvious that the book would be more properly described as a history of German farm labor between 1918 and 1945. As such it has great merit.

The Weimar era is essentially the period in which a capitalistic farm labor market emerged among many survivals of a precapitalistic nature. The functioning of the labor market was impaired, however, by the predominance of independent peasant holdings in the West and South, and even more by the survival of large estate owners with their special privileges in the East. The economic decline of the large agricultural enterprises which ceased to be profitable when the great depression set in, set a fateful process in motion, directed at the same time against the market economy and the democratic Republic. When in 1932 Chancellor Brüning decided to discontinue the subsidies of a number of large estates and to use the land for the settlement of small farmers, the Junkers prevailed upon President von Hindenburg to dismiss the Chancellor.

An inventory of the benefits which the Republic bestowed upon the farm workers reveals an astonishing wealth of measures. Among the items that may surprise the U.S. reader are compulsory sickness insurance for the farm worker—including the same maternity benefits as for industrial workers—and the applicability of the Works Council law to agriculture. Needless to say, it proved very difficult to enforce a good deal of the labor legislation in many areas so that considerable differences in the degree of observance of agricultural labor laws prevailed among the various regions of the Reich. These strengthened the high degree of differentiation in the institutional arrangements of agriculture that existed, for reasons of history, climate, soil, etc., in different areas. Trade unions of agricultural workers which had been set up after 1908 played a not unimportant role in the efforts for the improvement of the lot of agricultural labor, even though the tremendous membership gains made at the end of the Second World War could not be maintained long.

After the Nazis came to power, the attempt to set up a market economy in agriculture was abandoned in favor of a rigidly controlled system designed to encourage the remigration of the city dwellers to the land. "The Third Reich will be a peasant Reich or it will not be at all." This romantic ideal soon came into conflict with other objectives of Nazi policy: self-sufficiency of food supplies and effective preparation for an armed conflict. The author demonstrates convincingly how the "blood and soil" dreams of the new government had to give way, gradually but decisively, to the requirements of a nation preparing for war. The size of the farming units increased, mechanization progressed—at the expense of peasant farming which the new government had set out to strengthen. In the long run, the Nazis made no impact upon the evolution of German agriculture. The institutions created by them perished without a trace when the regime collapsed.

The treatment is essentially historical and descriptive. Few attempts are made to generalize, or to use the body of economic theory. Within these limits, this is a first-rate study.

ADOLF STURMTHAL

University of Illinois

Labor in the United States. By SANFORD COHEN. Columbus: Charles E. Merrill Books, 1960. Pp. xii, 676.

The choice of a text on the U.S. labor movement often hinges on whether the stress is on historical and institutional criteria or economic theory. Authors use various means to emphasize one of these areas or to combine them. One noted text in the field uses the device "of a two-part treatment with cross linkages wherever possible." Another is described as "an amalgam of two books: one on unions and industrial relations and another on wages, income distribution and labor mobility, etc." For his part, Cohen believes that "the major deficiency of the U.S. undergraduate student of the social sciences is a lack of historical perspective, and that an overemphasis upon contemporary events and theories produces an ephemeral knowledge that evaporates as events move on and theories change." The result is that the economics of labor

constitutes about 30 per cent of this book in contrast to the 40 or 50 per cent found in most labor texts. On the other hand, labor history and labor law have been more fully elaborated.

Part I deals with the development from colonial times of a labor force concept, with coverage of occupational, industrial and some philosophical characteristics of U.S. labor. Parts II through V deal with the familiar history of U.S. labor; the issues in collective bargaining; wage analysis; and labor law, from the origins of the Conspiracy Doctrine to the Landrum Griffin Law. Part VI treats of social security and the unemployment problem. Part VII discusses whether radical, conservative, or liberal forces govern labor's role in U.S. society. Each chapter concludes with questions and a helpful selection of readings. Organized in this way, the book is adaptable to any emphasis required in a particular labor course or by an instructor's preference.

As a broad survey of labor in the United States, this is a sound text. Considering the scope of the material covered, it is inevitable that some parts are stronger than others. Some of the historical chapters seem sketchy, and causal factors behind important events and concepts are not as fully developed as one would wish. For example, slave labor, immigration policy, labor philosophy, the impact of early radicalism, the great 1919 steel strike, the ambivalent forces set adrift in the 1920's and 1930's, the locus of power in the AFL-CIO structure, union finances—all are among the aspects of the book which receive cursory treatment. In view of the growing list of right-to-work laws and, to quote the author, the "mountain of right-to-work literature," and considering the resurgent conservative voice in American life and politics, the discussion on this issue in this text, as in most others, is for some inexplicable reason sparse.

In another area, adequate treatment of the impact of recent immigration from Puerto Rico and other Caribbean areas is wanting. This is one type of worker that unionism, in its original pristine fervor and impetus, sought to help. With attention drawn to the power and prestige struggle, labor leaders may have lost touch with the "job consciousness" which has long attracted the allegiance of the daily wage dependent. While it is true that this immigration constitutes a problem primarily to New York, the failure of the union movement to protect the newly arrived laborer from the unscrupulous employer, and in fact from the complicity of some locals, may in a real sense be an indictment of the preoccupation and indifference of an oversophisticated leadership. Cohen has a brief discussion of the Puerto Rican workers, but does not implicate the union movement analytically or conceptually in this problem. Nor, for that matter, do any of the current labor texts.

On the other hand, Cohen's chapters on Collective Bargaining, Wage Determination, Labor Law, Social Security and Unemployment, and the general discussion on labor's role in U.S. society in the "Conclusion" provide the meaty core of the book. Chapter 14 on "Inflation and Wages" is excellent and especially timely.

When Cohen suggests that marginal analysis "provides few insights into the complexities of wage determination," due to the presence of so many other factors, he echoes the views found in other labor texts. The consequence is

that macro-marginalism finds expression here, while marginal wage determination in the firm is briefly treated. This omission deprives students of good mental discipline and of the kind of esoteric insights into wage issues not likely to be gained out of school.¹

Those who consider this book will be guided by their own predispositions concerning the old battle between theory and institutionalism as the better foundation for understanding labor's problems. Most would agree that the safest approach is to assume that they are equally important. The real task is to make students aware of the importance of issues which bear upon contemporary labor problems, so that they know what is significant for further study when the occasion demands. The argument on behalf of stressing theory is that the nontheory areas may well form the supplementary reading list, while a better than rudimentary grasp of the economics of labor requires some classroom guidance and help.

Instructors who feel this way, and who also believe that only bad theories change and only good ones are taught may not be attracted by this author's choice of emphasis. On the other hand, this text would be better than most for the broad survey course, or for the general reader in need of a good over-all grasp of the labor movement in the United States.

RICHARD J. WARD

Amman, Jordan

¹ The kind of elementary coverage of micro-marginal wage theory contemplated may be found commendably done, for example, in Stonier and Hague's *A Textbook of Economic Theory*, London 1957, Ch. 10-12. But K. Boulding's *Economic Analysis*, New York 1955, Ch. 28; R. Leftwich in *The Price System and Resource Allocation*, New York 1960, Ch. 13-15; or Daniel Hamburg's *Principles of a Growing Economy*, New York 1961, Ch. 30, also give typical, if more sophisticated, treatment of the kind of marginal wage analysis that is lacking in most labor texts.

TITLES OF NEW BOOKS

General Economics; Methodology

- BOULDING, K. E. and others. Economic factors bearing upon the maintenance of peace—a report to the Committee on Research for Peace. Program of research no. 4. New York: Inst. for Internat. Order, 1961. 5 pts.
- BRIEFS, H. W. Three views of method in economics. Washington: Georgetown Univ. Press, 1960. Pp. iii, 97.
- The author is concerned with “three distinct and irreducible conceptions of scientific method” employed in economic analysis: the “method of isolation,” the “holistic” method, and the “mathematical” method, with “econometrics” as an extension of the last.
- GRAMPP, W. D. AND WEILER, E. T., ed. Economic policy—readings in political economy 3rd ed. Homewood, Ill.: Irwin, 1961. Pp. xiii, 415. \$5.25.
- GREISS, F. AND MEYER, F. W., ed. Wirtschaft, Gesellschaft und Kultur. Festgabe für Alfred Müller-Armack. Berlin: Duncker & Humblot, 1961. Pp. 680. DM 68.60.
- KORAČ, M. AND VLAŠKALIĆ, T. Osnovi političke ekonomije. (Principles of political economy.) Belgrade: Rad, 1960. Pp. 496.
- LANGE, O. Ekonomia polityczna, tom I. (Political economy, vol. 1.) Warsaw: Panstwowe Wydawnictwo Naukowe, 1959. Pp. 302. Zl. 25.
- LEONTIEV, L. A. Nachal'ny kurs politicheskoy ekonomii. (Introductory course in political economy.) Moscow: Gospolitizdat, 1960. Pp. 536.
- NEMCHINOV, A., ed. Primenenie matematiki kekonomike. (Application of mathematics in economics.) Moscow: Pub. House of Social-economic literature, 1959. Pp. 486.
- PEROVIĆ, M. Osnovi političke ekonomije. (Principles of political economy.) Belgrade: Savremena Administracija, 1960. Pp. 365.
- PORCH, H. Economics department publications, 1948-1961: an author index of the open literature, with abstracts. USAF project RAND, RM-2800-PR. Santa Monica: RAND, 1961. v. p.
- WEBER, A. Schein und Wirklichkeit in der Volkswirtschaft: Sechs Jahrzehnte im Dienste der Volkswirtschaftslehre. Berlin: Duncker & Humblot, 1961. Pp. 449. DM 33.60.
- ZURAWICKI, S. Ekonomia polityczna a matematyka. (Political economy and mathematics.) Warsaw: Panstwowe wydawnictwo ekonomiczne, 1961. Pp. 266. Zl. 15.
- Izvestia*. Bulletin de L'institut des Sciences Économiques. Vol. 20, no. 3/4. Summaries in French. Bulgaria: Académie des Sciences de Bulgarie, 1961. Pp. 322.
- Politicheskaya ekonomiya. Posobie v pomoshch izuchayushchim voprosy ekonomicheskoy teorii. (Political economy: an aid to students of the problems of economic theory.) Leningrad: Lenizdat, 1960. Pp. 363.
- Staatslexikon—Recht Wirtschaft Gesellschaft. Vol. 6, Oligopol bis Schweiz. Freiburg: Herder; New York: Herder Book Center, distrib., 1961. Pp. 1251. \$21.50; leather, \$23.80.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- ADELMAN, I. Theories of economic growth and development. Stanford: Stanford Univ. Press, 1961. Pp. viii, 164. \$5.
- APPEL, H.-E. Edwin Cannan und seine Schüler: Die Neu-liberalen an der London School of Economics. Tübingen: Mohr, 1961. Pp. 256.
- CALDEIRA, A. T. Formação de preços—problemas. Estudos Econ., Pol. e Soc. no. 23. Belo Horizonte: Faculdade de Ciências Econ. da Univ. de Minas Gerais, 1961. Pp. 118.

- CLARK, J. M. *Competition as a dynamic process*. Washington: Brookings Inst., 1961. Pp. xvii, 501. \$7.50.
- EMEL'YANOV, A. D. *Ekonomicheskaya effektivnost avtomatizatsii promyshlennogo proizvodstva*. (Economic efficiency of the automatization of industrial production.) Moscow: Mashgiz, 1960. Pp. 196.
- HAGUE, D. C., ed. *The theory of capital*. Proceedings of a conference held by the International Economic Association at Island of Corfu, Sept. 4-11, 1958. New York: St. Martin's Press, 1961. Pp. xiii, 415. \$12.
- JOHNSON, E. A. J. *American economic thought in the 17th century*. A re-issue. New York: Russell and Russell, 1961.
- KLAASSEN, L. H., ADAM, D. AND OTHERS. *Recherches récentes sur les études de marché et l'analyse de la demande*. Cahiers I.S.E.A., no. 113, ser. K, no 5. Paris: Inst. Sci. Écon. Appliquée, 1961. Pp. 224.
- KUZNETS, S. WITH JENKS, E. *Capital in the American economy—its formation and financing*. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1961. Pp. xxix, 664. \$12.
- LÄGE, F.-K. *Secular inflation*. Dordrecht: Reidel, 1961. Originally published in German by Fritz Knapp, Frankfurt am Main. Transl. by F. B. Catty.
- “The present treatise proposes to deal with the long-term and consequently supra-secular process in which a chronic surplus demand leads to permanent money depreciation, not necessarily from the point of view of its more familiar aspects but primarily in respect of its causes; we shall show that it is not the economic but the conflicting sociological and sociopsychological conditions inherent in distribution that are the causes of the ‘wear and tear’ of institutions on which money values depend and thus the cause of secular inflation.” (From the preface.)
- LANGER, H. AND OTHERS. *Preispolitik und Preisbildung in der Deutschen Demokratischen Republik*. Berlin: Verlag Die Wirtschaft, 1961. Pp. 244. DM 9.50.
- LIPINSKI, E. *Wartosc, Cena, Koszty*. (Value, price, cost.) Warsaw: Panstwowe wydawnictwo naukowe, 1961.
- MALANOS, G. *Intermediate economic theory*. Chicago: Lippincott, 1962. Pp. xiii, 540. \$6.50.
- MARSHALL, A. *Principles of economics*. Vol. 1, An introductory volume. Vol. 2, Notes. 9th (variorum) ed. Annotations by C. W. Guillebaud. New York: Macmillan, 1961. Pp. xxxiv, 858; ix, 886. \$8 each vol.
- MAZZOCCHI, G. *Variazioni di produttività e politica salariale*. Saggi di teoria e pol. econ. no. 9. Milan: A. Giuffrè, 1961. Pp. 130. L. 1.000.
- PASCHKE, W. *Bestimmungsgründe des persönlichen Sparens*. Ein Beitrag zur ökonomischen Verhaltensforschung. Berlin: Duncker & Humblot, 1961. Pp. 223. Dm 28.60.
- PERROUX, F. *L'économie du XX^e siècle*. Paris: Presses Univ. de France, 1961. Pp. 598. NF 24.
- ROTHENBERG, J. *The measurement of social welfare*. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xii, 357. \$7.95.
- SMIT, M. N. *Ocherki istorii burzhuaznoy politicheskoy ekonomii (Seredina XIX—seredina XX vv.)*. (Outline of the history of bourgeois political economy: middle of XIX—middle of XX century.) Moscow: Sotsekgiz, 1961. Pp. 296.
- SMITH, A. *The wealth of nations*. Representative selections, ed. by B. Mazlish. New York: Liberal Arts Press, 1961. Pp. xxxiv, 310. Paper, \$1.45.
- SOLDACZUK, J. *Teoria ekonomiczna J. M. Keynes'a*. (Economic theory of J. M. Keynes.) Warsaw: Panstwowe wydawnictwo naukowe, 1959. Pp. 280.
- STEVERS, TH. A. *De wenselijkheid van structureel inflatoire overheidsfinanciering in de jaren zestig*. Leiden: H. E. Stenfert Kroese N. V., 1961. Pp. 46.
- SULMICKI, P. *Przepływy miedzygaleziowe*. (Interindustry flows.) Warsaw: Polskie wydawnictwa gospodarcze, 1959. Pp. 300. ZL 17.

- TUCKER, R. C. *Philosophy and myth in Karl Marx*. New York: Cambridge Univ. Press, 1961. Pp. 263. \$5.50; Paper, \$1.75.
- VAN STRAELEN, R. A. AND VIRENQUE, P. H. *De input-output analyse—een methode voor het kwantitatief onderzoek der economische structuur*. Louvain: Univ. Boekhandel Uystpruyst, 1961. Pp. xv, 453. Bfr. 800.
- VRANČIĆ, J. *Problem zakona vrijednosti u prelaznom periodu*. (The problem of the law of value in the transitional period.) Zagreb: Ekonomski Pregled, 1961. Pp. 312.
- WILSON, T. *Inflation*. Cambridge: Harvard Univ. Press, 1961. Pp. 280.
- ZIELINSKI, J. *Rachunek gospodarczy przy socjalizmie*. (Economic calculus under socialism.) Warsaw: Państwowe Wydawnictwo Naukowe, 1961. Pp. 226.

Economic History; Economic Development; National Economies

- AITKEN, H. G. J. *American capital and Canadian resources*. Cambridge: Harvard Univ. Press, 1961. Pp. xii, 217. \$5.
- BALAKRISHNA, R. *Review of economic growth in India*. Bangalore City: Bangalore Press, 1961. Pp. vi, 247. Rs 10.
- BARBER, W. J. *The economy of British Central Africa—a case study of economic development in a dualistic society*. Stanford: Stanford Univ. Press, 1961. Pp. xii, 271. \$6.50. ●
- BLUM, J. *Lord and peasant in Russia from the ninth to the nineteenth century*. Princeton: Princeton Univ. Press, 1961. Pp. x, 656. \$12.50.
- BOGUE, D. J. AND BEALE, C. L. *Economic areas of the United States*. Stud. in pop. distrib. no. 15. New York: Free Press of Glencoe, 1961. Pp. 1162.
- BRUTON, H. J. *Inflation in a growing economy*. Ser. in monetary and internat. econ., no. 2. Bombay: Univ. of Bombay, 1961. Pp. 58. Rs 5.
- CLEMENT, M. *An economic evaluation of the federal grant-in-aid programs in New England, 1953-1958—a research study for the Federal Reserve Bank of Boston*. Boston: Federal Reserve Bank of Boston, 1961. Pp. 150.
- COLE, J. P. AND GERMAN, F. C. *A geography of the USSR: the background to a planned economy*. London: Butterworths, 1961. Pp. ix, 290. \$8.50.
- An economic geography of the USSR at the beginning of the 1959-65 seven-year plan.* "A great deal of descriptive material has been drawn from the most up-to-date Soviet textbooks on economic geography, systematic and regional, and from other Soviet publications, and an attempt has been made to explain the aims of Soviet economic planning and to analyze Soviet achievements both in absolute terms and in the light of progress claimed by Soviet propagandists." (From the introduction.)
- COLM, G. AND GEIGER, T. *The economy of the American people—progress, problems, prospects*. 2nd ed. Planning pamph. no. 115. Washington: Nat. Planning Assoc., 1961. Pp. x, 200. \$2.
- DAS, N. *The public sector in India*. 2nd ed. New York: Asia Pub. House; Taplinger distrib., 1961. Pp. vi, 180. \$4.50.
- DEWHURST, J. F., COPPOCK, J. O., YATES, P. L. AND OTHERS. *Europe's needs and resources—trends and prospects in eighteen countries*. New York: Twentieth Century Fund, 1961. Pp. xxvi, 1198. \$12.
- DONALD, M. B. *Elizabethan monopolies—the history of the Company of Mineral and Battery Works from 1565 to 1604*. Edinburgh and London: Oliver and Boyd, 1961. Pp. xv, 256. 50s.
- DUCASSÉ, P., PÉROUX, F., MARCZEWSKI, J., LÉ THANH KHÔI, GILLE, B. AND FOHLEN, C. *Évolution des techniques et progrès de l'économie (1)*. Cahiers I.S.E.A., no. 111, ser. AD, no. 1. Paris: Inst. Sci. Écon. Appliquée, 1961. Pp. 176.
- FORNELL, E. W. *The Galveston era—the Texas crescent on the eve of secession*. Austin: Univ. of Texas Press, 1961. Pp. xiv, 355. \$5.

- FRÖHLICH, W., ed. Land tenure, industrialization and social stability: experience and prospects in Asia. Marquette Asian stud. no 2. Milwaukee: Marquette Univ. Press for Inst. for Asian Stud., 1961. Pp. xv, 301. \$9.
- GÓMEZ, R. R. Cuba despertar de América: ensayo económico—social. *Investigación Económica*, Spec. no., vol. 21 (83). Mexico: Escuela Nacional de Econ., 1961. Pp. xvi, 267.
- GOTTMANN, J. Megalopolis—the urbanized northeastern seaboard of the United States. New York: Twentieth Century Fund, 1961. Pp. xi, 810. \$10.
- GOULD, P. R., ed. Africa—continent of change. Belmont, Calif.: Wadsworth, 1961. Pp. x, 256.
- GUPTA, S. C. An economic survey of Shamaspur Village (District Saharanpur, Uttar Pradesh)—a case study in the structure and functioning of a village economy. New York: Asia Pub. House; Taplinger, distrib., 1959. Pp. viii, 148. \$4.25.
- HANSEN, W. L., ROBSON, R. T. AND TIEBOUT, C. M. Markets for California products: an analysis of the sources of demand—entire State of California, Los Angeles-Long Beach, San Francisco-Oakland, Balance of state. A report prepared for the State of California Economic Development Agency. Sacramento: Printing Div., Doc. Sec., State of Calif., 1961. Pp. 70. \$5.50.
- INEN, O., comp. Argentinien. Pt. I, Wirtschaftliche Landeskunde, No. 1. Kieler Schrifttumskunden zu Wirtschaft und Gesellschaft no. 3. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1961. Pp. 269.
- ISARD, W. AND CUMBERLAND, J. H., ed. Regional economic planning, techniques of analysis. Paris: European Productivity Agency, Org. Econ. Co-op. and Develop., 1961. Pp. 450.
Contains papers and proceedings of the O.E.E.C. conference held in Bellagio, Italy, in 1960.
- JACOBY, E. H. Agrarian unrest in Southeast Asia. New York: Asia Pub. House; Taplinger, distrib., 1961. Pp. xi, 279. \$7.25.
- JAHN, G. AND BISSIG, W. M. F., ed. Die Wirtschaftssysteme der Staaten Osteuropas und der Volksrepublik China. Schriften des Vereins f. Sozialpol., n.s. Vol. 23. Berlin: Duncker & Humblot, 1961. Pp. 397.
(A collection of explanatory articles, slightly influenced by the official Soviet doctrine, but otherwise novel in the attempt at an "anti-equilibrium" rationalization. Only the USSR, Poland, and Czechoslovakia are discussed. China will be covered in a future volume.)
- KEAN, M. S. India's economic development and international economic relations. New York: Asia Pub. House; Taplinger, distrib., 1961. Pp. 163. \$5.
- KUCHHALL, S. C. The industrial economy of India. 3rd ed. Allahabad: Chaitanya, 1961. Pp. 631. Rs 16.50.
- LEBRET, L.-J. Dynamique concrète du développement. Paris: Écon. et Humanisme, Ed. Ouvrières, 1961. Pp. 550. NF 42.
- MANTOUX, P. The industrial revolution in the eighteenth century—an outline of the beginnings of the modern factory system in England. Rev. ed. New York: Macmillan, 1961. Pp. 528. \$7.75.
Transl. from French by M. Vernon; first pub. 1928.
- MARCZEWSKI, J. Histoire quantitative—Buts et méthodes. Toutain, J.-C. Le produit de l'agriculture française de 1700 à 1958: Pt. 1, Estimation du produit au XVIII^e siècle. Pt. 2, La croissance. Cahiers I.S.E.A., no. 115, ser. AF, no. 1. Paris: Inst. Sci. Écon. Appliquée, 1961. liv, 216; 285.
- MILLIKAN, M. F. AND BLACKMER, D. L. M., ed. The emerging nations: their growth and United States policy. (Authors: F. M. BAROR and others. Stud. from the Center for Internat. Stud., M.I.T.) Boston: Little, Brown, 1961. Pp. 171. \$4.50; paper, \$2.50.

- MIŠIĆ, D. Investicije i privredni razvoj. (Investments and economic development.) Belgrade: Naučna Knjiga, 1960. Pp. 267.
- MOTYLEV, V. E. Ekonomicheskaya istoria zarubnezhnykh stran, epokha domonopolisticheskogo kapitalizma, kurs lektzii. (Economic history of foreign countries, the period of pre-monopolistic capitalism—course of lectures.) Moscow: Pub. House for Soc. Sci. Lit., 1961. Pp. 400.
- MUNN, R. F. The Southern Appalachians—a bibliography and guide to studies. Morgantown: West Virginia Univ. Library, 1961. Pp. iii, 106.
- NOVE, A. The Soviet economy—an introduction. Minerva ser. students' handbooks no. 5. New York: Praeger, 1961. Pp. 328.
- RANIS, G. Industrial efficiency and economic growth: a case study of Karachi. Monogr. in econ. develop. no. 5. Karachi: Inst. of Develop. Econ., 1961. Pp. 54.
- RAYNAULD, A. Croissance et structure économiques de la province de Quebec. [Quebec]: Ministère de l'Industrie et du Commerce, Province de Quebec, 1961. Pp. 657.
- RUSSO, F., PINSON, M. AND OTHERS. Les brevets d'invention dans l'économie. Pt. 1, Caractères institutionnels et problématique économique. Cahiers I.S.E.A., no. 116, ser. T, no. 3. Paris: Inst. Sci. Écon. Appliquée, 1961. Pp. 163.
- SAMUELSSON, K. Religion and economic action. Transl. from Swedish by E. G. French. New York: Basic Books, 1961. Pp. xi, 157. \$3.75. First pub. Stockholm, 1957. •
- SENGUPTA, J. K. AND SEN, A. India's economic growth—processes, problems and policies. Calcutta: Post-Graduate Book Mart, 1961. Pp. xvi, 260. Rs 15.
- SLICHTER, S. H. Economic growth in the United States—its history, problems and prospects. Ed. by J. T. Dunlop. [Baton Rouge]: Louisiana State Univ. Press, 1961. Pp. xi, 196. \$5.
Merrill Foundation lectures presented at Tulane University in 1954.
- STALEY, E. The future of underdeveloped countries—political implications of economic development. Rev. ed. New York: Harper, for Council on For. Rel., 1961. Pp. xx, 483. \$5.50. Paper, Praeger, \$2.50.
- THROCKMORTON, A. L. Oregon argonauts—merchant adventurers on the western frontier. Portland, Oregon: Oregon Historical Society, 1961. Pp. xvii, 372. \$10.
- VENKATASUBBIAH, H. Indian economy since independence. 2nd ed. New York: Asia Pub. House for Inst. of Pacific Rel.; Taplinger, distrib., 1961. Pp. xi, 359. \$6.50.
- VERESHCHAGIN, I. AND RYBALKIN, V. O zakonornostiakh ekonomicheskogo razvitiia mirovoy socialisticheskoi sistemy. (Regularities in the economic development of the world socialist system.) Moscow: Inst. of Internat. Relations, 1961. Pp. 175.
- VERHAEGEN, B. Contribution à l'histoire économique des Flandres. Vol. 1, Analyse de la répartition professionnelle 1846-1910. Vol. 2, Exposé statistique. Louvain and Paris: Nauwelaerts, for Univ. Lovanium de Léopoldville, 1961. Pp. 384; 328. Paper, 490 fr.
- Albania, a physical and economic survey. Washington: Joint Pub. Research Svce., 1961. Pp. 195.
- Central economic plan 1961. The Hague: Central Planning Bur., 1961. Pp. 157.
- Commonwealth development and its financing. Pt. 1, Canada. Pt. 2, Federation of Rhodesia and Nyasaland. Pt. 3, Pakistan. London: H. M. Stat. Off. for Commonwealth Econ. Com.; New York: British Info. Svce., distrib., 1961. Pp. 59; 44; 53. \$1.50; \$1.35; \$1.50.
- Društveni plan privrednog razvoja Jugoslavije 1961-1965. (Social plan of economic development of Yugoslavia, 1961-1965.) Belgrade: Kultura, 1961. Pp. 164.
- Fifth report 1959 and 1960—with an essay, Income differentials in Israel, by G. Hanoch. Jerusalem: Falk Project for Econ. Research in Israel, 1961. Pp. 242.
- Growth for free peoples. *SRI Journal*, vol. 5, 2nd quarter, 1961. Menlo Park, Calif.: Stanford Research Inst., 1961. Pp. 53. Contribution by: M. Zinkin, W. J. Platt, C. M. Mottley, L. Tarshis, J. B. Condliffe, H. E. Robison and W. B. Gibson.

- The Institute of Development Economics—annual report July 1, 1960-June 30, 1961. Karachi: Inst. of Develop. Econ., 1961. Pp. 27.
- The national income and population income in 1958—Hungary. Washington: Joint Pub. Research Svce., 1961. Pp. 113.
- The production and structure of industry (1949-1959)—Hungary. Joint Pub. Research Svce., no. 8877. Washington: Supt. Docs., 1961. Pp. 340.
- Repercussions des dépenses de défense sur l'économie nationale. Brussels: Ministry of National Defense, Center for Econ. Stud., 1960. Pp. 47.
- Sotsialisticheskaya industrializatsiya stran narodnoy demokratii. (Socialist industrialization of the countries of people's democracy.) Moscow: Gosplanizdat, 1960. Pp. 301.
- Targets for U.S. economic growth in the early 60s, a statement by the NPA Steering Committee, and a report by G. Colm with the assistance of P. Wagner. Planning pamph. no. 111. Washington: Nat. Planning Assoc., 1961. Pp. 32.

Statistical Methods; Econometrics; Social Accounting

- BERGSON, A. The real national income of Soviet Russia since 1928. Cambridge: Harvard Univ. Press, 1961. Pp. xix, 472. \$8.75.
- BUNICH, P. G. Osnovnyie fondy socialisticheskoi promyshlennosti. (Capital assets of socialist industry.) Moscow: Pub. House for Planning Lit., 1960. Pp. 304.
- DAVID, F. N. AND PEARSON, E. S. Elementary statistical exercises. New York: Cambridge Univ. Press, 1961. Pp. vii, 108. Paper, \$2.75.
- DUDORIN, V. I. Planirovanie i lineynoye programmirovaniye material'notekhnicheskogo snabzheniya. (Planning and linear programming of material and technical supplies.) Moscow: Gosplanizdat, 1961. Pp. 247.
- GNEDENKO, B. V., KOROLYUK, V. S. AND YUSECHENKO, E. L. Elementy programmirovaniya. (Elements of programming.) Moscow: Fizmatgiz, 1961. Pp. 348.
- (This is the first Soviet full-scale textbook on the theory and methodology of all-purpose computer programming. Developed by a team of mathematicians at the Computer Center of the Academy of Sciences of the Ukrainian SSR, it is only partially related to economic problems.)
- KENDRICK, J. W., ASSISTED BY M. R. PECK. Productivity trends in the United States. N.B.E.R., no. 71, gen. ser. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1961. Pp. lii, 630. \$12.50.
- PLYSHEVSKIY, B. P. Raspreделение natsional'nogo dokhoda SSSR. (The distribution of the national income of the USSR.) Moscow: Sotsekgiz, 1960. Pp. 247.
- RAO, V. K. R. V., SEN, S. R., DIVATIA, M. V. and DARTTA, U., ed. Papers on national income and allied topics. Indian Conf. on Research in Nat. Income, vol. 1. New York: Asia Pub. House; Taplinger, distrib., 1960. Pp. xxii, 298. \$8.75.
- This is the "first volume in the series which the Indian Conference on Research in National Income (ICRNI) proposes to bring out from time to time. The present volume contains a selection from the papers presented at two Conferences of workers in the national income field in India, the first of which was preliminary to the formation of the National Income Conference. . . . The topics covered relate to conceptual and methodological aspects of national income estimates, national accounts and related aggregates, estimates of long term growth, and estimates of savings, investment and capital stock." (From the introduction.)
- SPURR, W. A. AND BONINI, C. P. Workbook in business and economic statistics. Rev. ed., to accompany Spurr, Kellogg and Smith, *Business and economic statistics*. Homewood, Ill.: Irwin, 1961. Pp. viii, 277. \$4.25.
- Voprosy novogo poryadka planirovaniya selskogo khosiaistva. (Questions of new methods of planning the agricultural economy.) Kuybyshev, 1961. Pp. 420.

Economic Systems; Planning and Reform; Cooperation

- AGARWAL, R. C. State enterprise in India. Allahabad: Chaitanya, 1961. Pp. 271. \$3.
- BOR, M. Z. Voprosy metodologii planovogo balansa narodnogo khozyaystva SSSR. (Methodological problems in the planning of the balance of the national economy of the USSR.) Moscow: USSR Acad. of Sci., 1960. Pp. 352.
- BRUS, W. Ogólne problemy funkcjonowania gospodarki socjalistycznej. (General problems of functioning of a socialist economy.) Warsaw, 1961.
- DASGUPTA, A. K., SEN, A. AND SENGUPTA, J. K. Planning and the plans. Calcutta: Post-Graduate Book Mart, 1961. Pp. xx, 255. Rs 12.
- DRISCOLL, R. B. Capitalist and socialist economies—a Marxist analysis of modern political economy. Portland, Oregon: R. B. Driscoll, 1961. Pp. 100, mimeo.
- FEIGIN, YA. G., ed. Osobennosti i faktory razmeshcheniya otrasley narodnogo khozyaystva SSSR. (The peculiarities of and factors in the location of industries in the national economy of the USSR.) Moscow: USSR Acad. of Sci., 1960. Pp. 696.
- HERZOG, L. Democracy's answer to communism through group enterprise—a master plan for the economic and organizational structure of the Basic Economic Unit (BEU). New York: William-Frederick Press, 1955. Pp. 185. \$4.
- "My purpose is to argue the practicability of a new, nonpolitical, and basic solution to the economic and social problems of our country: specifically, the application of modern mass-production methods to the production of all essential consumers' goods and services for an assured primary market of 10,000 consumer-families (40,000 individuals) who themselves own and operate the means of production." (From the preface.)
- KAMENICER, S. E. Ekonomika, organizatsia i planirovanye promyshlennykh predpriatii. (Economics, organization and planning of industrial enterprises.) 2nd enl. ed. Moscow: Pub. House for Pol. Lit., 1961. Pp. 711.
- LAVICKA, R. AND TOMAN, J. The State Planning Commission in Czechoslovakia. Washington: Joint Pub. Research Svce., 1961, Pp. 125.
- NOWICKI, A. L'économie "généralisée" et la pensée actuelle d'Oskar Lange. Cahiers I.S.E.A., no. 114, ser. G., no. 11. Paris: Inst. Sci. Écon. Appliquée, 1961. Pp. 181.
- PAVLENDA, V. Vybrané kapitoly k štúdiu politickej ekonómie socializmu. (Selected studies in the political economy of socialism.) Bratislava: Osveta, 1960. Pp. 372.
- SADOWSKI, W. Teoria podejmowania decyzji. (Decision theory.) Warsaw: Polskie wydawnictwa gospodarcze, 1960. Pp. 312.
- SOROKIN, G. M. Planirovanie narodnogo khosiaistva SSSR, voprosy teorii i organisatsii. (Planning of the national economy of the USSR: questions of theory and organization.) Moscow: Pub. House of Socioecon. Lit., 1961. Pp. 459.
- Dve mirovyie systemy khosiaistva. (Two world systems of economy.) Moscow: Pub. House of C. C. CPUSS, 1961. Pp. 442.
- Ekonomicheskie problemy perekhoda ot socialism k kommunizmu. (Economic problems of transition from socialism to communism.) Rostov: 1960. Pp. 374.
- Politicheskaya ekonomiya sotsializma. (Political economy of socialism.) Moscow: Sotsekgiz, 1960. Pp. 527.
- Politicheskaya ekonomiya sotsializma. (Political economy of socialism.) Moscow: Vysshaya Shkola, 1960. Pp. 782.
- Problemy rasmeshchenia proizvoditel'nykh sil v period rasvernutoho stroitelstva kommunizma. (Problems of location of productive resources in the period of active construction of Communism.) Moscow: Pub. House of Planning Lit., 1960. Pp. 336.
- Tipovaya metodika opredeleniya ekonomicheskoy effektivnosti kapital'nykh vlozheniy v narodnom khozyaystve SSSR. (Normative methods of analysis of the economic efficiency of capital investments in the national economy of the USSR.) Moscow: Gosplan SSSR, 1960. Pp. 569.

Business Fluctuations

- SHISKIN, J. Signals of recession and recovery—an experiment with monthly reporting. Occas. paper no. 77. New York: Nat. Bur. Econ. Research, 1961. Pp. xii, 191. \$3.
- Economic report of the President, transmitted to the Congress, January 20, 1962, together with the annual report of the Council of Economic Advisers. Washington: Supt. Docs., 1962. Pp. v, 300. \$1.25.
- Progress made by the Department of Defense in reducing the impact of military procurement on the economy. Hearing before the Subcommittee on Defense Procurement of the Joint Economic Committee, 87th Cong., 1st sess., June 12, 1961. Washington: Supt. Docs., 1961. Pp. v, 156.

**Money, Credit and Banking; Monetary Policy;
Consumer Finance; Mortgage Credit**

- BUTLIN, S. J. Australia and New Zealand Bank—the Bank of Australasia and the Union Bank of Australia Limited 1828-1951. New York: Longmans, Green, 1961. Pp. xiv, 459.
- KORNER, E. Entdeckung des wertbeständigen Geldes. Berlin: Duncker & Humblot, 1961. Pp. 391. DM 48.
- LÜTHY, H. La banque protestante en France de la révocation de l'Edit de Nantes à la Révolution. Vol. 2, De la banque aux finances (1730-1794). Paris: S.E.V.P.E.N., 1961. Pp. 861.
- SPOFFORD, G. Guideposts for banking expansion. New Brunswick: Rutgers Univ. Press, 1961. Pp. 190. \$4.50.
- STADERMANN, B. Offenmarktgeschäfte als Instrument der Liquiditätspolitik. Frankfurt am Main: Knapp, 1961. Pp. 178. DM 16.20.
- VEIT, O. WITH FRANZKE, H.-U., AUST, E. AND MAASS, W. Grundriss der Währungspolitik. Frankfurt am Main: Knapp, 1961. Pp. 844. DM 69.80.
- Bank growth goals. Special rept. New York: Institutional Services, Francis I. duPont, 1961. Pp. 84.
- Bank of Israel annual report 1960—presented to the Government and the Finance Committee of the Knesset. English ed. Jerusalem: Bank of Israel, 1961. Pp. xix, 422.
- The Federal Home Loan Bank System. Washington: Fed. Home Loan Bank Board, 1961. Pp. 89.
- Review of Report of the Commission on Money and Credit. Hearings before the Joint Economic Committee, 87th Cong., 1st sess., Aug. 14-18, 1961. Washington: Supt. Docs., 1961. Pp. v, 486. \$1.25.
- Taxation of mutual savings banks and loan associations. Hearings on Treasury Department report on taxation of mutual savings banks and savings and loan associations before the House Committee on Ways and Means, 87th Cong., 1st sess., Aug. 9 and 10, 1961. Washington: Supt. Docs., 1961. Pp. 425.
- Truth in lending bill. Hearings before a Subcommittee of the Senate Committee on Banking and Currency, 87th Cong., 1st sess., July 17-27, 1961. Washington: Supt. Docs., 1961. Pp. 1388.

Public Finance; Fiscal Policy

- BENSON, G. C. S. AND McCLELLAND, H. F. Consolidated grants—a means of maintaining fiscal responsibility. Washington: Am. Enterprise Assoc., 1961. Pp. v, 41. \$1.
- COOKE, H. J. The role of debt in the economy. Washington: Public Affairs Press, 1961. Pp. ix, 115. \$3.25.
- GRAZIANI, A. La teoria delle scelte negli investimenti pubblici. Naples: Ed. Jovene, 1961. L. 2500.

- HOLMANS, A. E. United States fiscal policy 1945-1959—its contribution to economic stability. New York: Oxford Univ. Press, 1961. Pp. xiv, 342. \$6.40.
- PEACOCK, A. T. AND WISEMAN, J., assisted by J. VEVERKA. The growth of public expenditure in the United Kingdom. NBER no. 72, gen. ser. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1961. Pp. xxxi, 213. \$5.
- Federal fiscal issues. New York: Tax Foundation, 1961. Pp. 54.
- Montgomery's federal taxes. 38th ed. New York: Ronald Press for Lybrand, Ross Bros. & Montgomery, 1961. Var. pp. \$30.
- State and local taxation of privately owned property located on federal areas—proposed amendment of the Buck act. Washington: Advisory Comm. on Intergov. Rel., 1961. Pp. 34.

International Economics

- BALASSA, B. The theory of economic integration. Homewood, Ill.: Irwin, 1961. Pp. xiii, 304. \$5.50.
- BOWIE, R. R. AND GEIGER, T. The European economic community and the United States. Report of the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. xi, 60. 25¢.
- CARNEIRO, O. A. D. Movimentos internacionais de capital e desenvolvimento econômico. Recife: Comissão de desenvolvimento Econ. de Pernambuco, 1961. Pp. 148.
- CONAN, A. R. The rationale of the sterling area—texts and commentary. New York: St. Martin's Press; London: Macmillan, 1961. Pp. 133. \$4.75.
- DEL PUNTA, V. The United States balance of payments re-examined. Transl. from Italian by A. Vassallo. Rome: Tipografia Delle Terme, 1961. Pp. vii, 132.
- DENIS, H., KINDLEBERGER, C. P. AND OTHERS. Stratégies internationales, croissance et dimension des nations. Cahiers I.S.E.A., no. 113, ser. P, no. 5. Paris: Inst. Sci. Écon. Appliquée, 1961. Pp. 208.
- DOWD, L. P., ed. The European economic community—implications for Michigan business. Michigan bus. rept. internat. ser. no. 36. Ann Arbor: Bur. Bus. Research, School of Bus. Admin., Univ. of Michigan, 1961. Pp. xviii, 181. \$3.
- EINZIG, P. A dynamic theory of forward exchange. New York: St. Martin's Press; London: Macmillan, 1961. Pp. xxvi, 573. \$15.
- This is a successor to the author's *The Theory of Forward Exchange* (1937). In his preface to the present book, he writes that he has made some use of the prewar materials, but has added a great deal of new material: "The result is the present book. At least three-fifths of the material it contains is either entirely new or it has been thoroughly rewritten, in addition bringing it up to date. The remaining two-fifths, too, had to be revised more or less, reinterpreted and brought up to date, . . ."
- ENGLISH, H. E., ed. Canada and the new international economy—three essays. Toronto: Univ. of Toronto Press for Carleton Univ., 1961. Pp. 75. Paper, \$1.95.
- HAHN, L. A. Über monetäre Integration. (Vortrag gehalten am February 17, 1961.) Tübingen: Mohr, 1961. Pp. 23. DM 2.50.
- HARDT, J. P. WITH STOLZENBACH, C. D. AND KOHN, M. J. The cold war economic gap—the increasing threat to American supremacy. New York: Praeger, 1961. Pp. xiv, 114. \$4.
- HARRIS, S. E., ed. The dollar in crisis. New York: Harcourt, Brace & World, 1961. Pp. x, 309. Paper, \$3.45.
- HERTER, C. A. AND CLAYTON, W. L. A new look at foreign economic policy in light of the cold war and the extension of the Common Market in Europe. Report of the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 10.
- HOCKER, B. World price collapse. Spokane: B. Hocker; Kansas: Scholar and Reference Press, 1959. Pp. 90. \$7.50.

- HUNSBERGER, W. S. Japan in United States foreign economic policy. Report of the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. vii, 27. 25¢.
- HYONG-YOP, C. Korean Labor Party's policy on the development of foreign trade. Washington: Joint Pub. Research Svce., 1961. Pp. 53.
- JACOBSSON, P. The market economy in the world of today. Jayne lectures for 1961. Philadelphia: Am. Philosoph. Soc., 1961. Pp. x, 77. \$1.50.
- KAPLAN, M. A. United States foreign policy in a revolutionary age. Policy memo. no. 25. Princeton: Center of Internat. Stud., Woodrow Wilson School of Pub. and Internat. Affairs, Princeton Univ., 1961. Pp. ii, 47. \$1.
- KATZ, S. I. Sterling speculation and European convertibility: 1955-1958. Princeton: Internat. Fin. Sec., Dept. Econ., Princeton Univ., 1961. Pp. 30. Single copy free.
- KENEN, P. B. United States commercial policy—a program for the 1960's. Report of the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. viii, 37. 15¢.
- LINDER, S. B. An essay on trade and transformation. New York: Wiley; Stockholm: Almqvist & Wiksell, 1961. Pp. 167. \$5.
- MIRABELLA, G. L'Unificazione monetaria della Comunità Economica Europea. Palermo: Seminario de Economia Politica e Scienza delle Finanze dell'Università degli Studi di Palermo, 1960. Pp. 89.
- O'DONNELL, J. L. AND VERWAY, D. I. An analysis of foreign trade statistics of the Michigan Customs District (1951-53 and 1958-59). Occas. paper no. 6. East Lansing. Bur. Bus. and Econ. Research, Grad. School of Bus. Admin., Michigan State Univ., 1961. Pp. 80. \$1.
- PISAR, S. A new look at trade policy toward the Communist Bloc—the elements of a common strategy for the West. Materials prepared for the Subcommittee on Foreign Economic Policy of the Joint Economic Committee. Washington: Supt. Docs., 1961. Pp. viii, 103. 30¢.
- REBOUD, L. Systèmes fiscaux et marché commun. Recherches écon., no. 6. Paris: Sirey, 1961. Pp. v, 374. NF 24.
- REISCHER, O. R. Trade adjustment in theory and practice. Report of the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. viii, 98. 30¢.
- REUSS, H. S. The task for 1962: a free world community. Policy paper prepared for the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 8. 10¢.
- SOLOTAREV, B. I. Mirovoy socialisticheski rynok. (World socialist market.) Moscow: Pub. House for Social Lit., 1961. Pp. 200.
- WONNACOTT, R. J. Canadian-American dependence—an interindustry analysis of production and prices. Contrib. to econ. analysis no. 24. Amsterdam: North-Holland Pub. Co., 1961. Pp. xvi, 143.
- The act for international development: a program for the decade of development—objectives, concepts, and proposed program. Prepared by the President's Task Force on Foreign Economic Assistance. Washington: Supt. Docs., 1961. Pp. 173.
- The common market and the United Kingdom—a guide to the European Economic Community and the possible effects on Britain of membership. London: Westminster Bank, 1961. Pp. 30.
- Economic policies toward less developed countries. Studies prepared by R. F. Mikesell and R. L. Allen for the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. viii, 96. 30¢.
- Financing foreign operations—sources of capital for investments, operations and exports in international markets. New York: Bus. Internat., 1961. Pp. 113. \$50.

- Foreign assistance and related agencies appropriations for 1962. Hearings before the Senate Committee on Appropriations, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 693.
- International trade 1960. Sales no. GATT/1961-4. Geneva: Contracting Parties to the Gen. Agreement on Tariffs and Trade, 1961. Pp. 109. \$1.50.
- La liquidité du système monétaire international. Colloquium of April 22-23, 1961. Brussels: Ed. Lib. Encyclopédique S.P.R.L., 1961.
- Report of the government of the United States of America to the Food and Agriculture Organization of the United Nations, 1958-60, under Article XI of the FAO Constitution. Prep. by U.S. FAO Interagency Com. Washington: Supt. Docs., 1961. Pp. 76.
- Report on the first Inter-American Trade Union Economic Conference (São Paulo, Brazil, August 17-19, 1961). Mexico City: Dept. Econ. and Soc. Affairs and Pub. of ORIT, 1961. Pp. 44.
- The statesman's year-book—statistical and historical annual of the states of the world for the year 1961-1962. Ninety-eighth publication. Ed. by S. H. Steinberg. New York: St. Martin's Press, 1961. Pp. xxviii, 1684.
- Statistical data—population, employment, agriculture, industry, trade, transport, external trade, finance. (Member countries of the Council of Europe and overseas associated countries.) In French and English. Strasbourg: Doc. Sec., Council of Europe, 1961. Pp. cxviii, 459.
- Struktur und Abhängigkeiten der westdeutschen Importe in den Jahren 1950-1958. Tübingen: Mohr, 1961. Pp. 211.
- Trade restraints in the Western community—with tariff comparisons and selected statistical tables pertinent to foreign economic policy. Report of the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. vii, 59. 20¢.
- Trade with Cuba. Hearings before the House Committee on Interstate and Foreign Commerce, 87th Cong., 1st sess., Aug. 29 and Sept. 1, 1961. Washington: Supt. Docs., 1961. Pp. 78.
- The United States balance of payments re-examined. Research works ser. no. 2. Rome: General Confederation of Italian Indus., 1961. Pp. xi, 89. \$1.40.

Business Finance; Investment and Security Markets; Insurance

- AARONOVITCH, S. The ruling class—a study of British finance capital. London: Lawrence and Wishart, 1961. Pp. 192. 12s. 6d.
- BERANEK, W. Common stock financing, book values and stock rights: the theory and the evidence. Wisconsin commerce rept., vol. 6 (3). Madison: Univ. of Wisconsin, School of Commerce, Bur. of Bus. Research and Svce., 1961. Pp. 64. \$1.15.
- BICKELHAUPT, D. L. Transition to multiple-line insurance companies. Homewood, Ill.: Irwin for S. S. Huebner Foundation for Insurance Ed., Univ. Pennsylvania, 1961. Pp. xx, 226. \$6.
- BRAINARD, C. H. Automobile insurance. Homewood, Ill.: Irwin, 1961. Pp. xv, 574. \$8.25.
- COE, J. C. Common stocks for investors and traders. New York: Vantage Press, 1961. Pp. 284. \$3.95.
- DONALDSON, G. Corporate debt capacity—a study of corporate debt policy and the determination of corporate debt capacity. Boston: Div. of Research, Grad. School of Bus. Admin., Harvard Univ., 1961. Pp. xiv, 294. \$4.
- FOSTER, L. O. Understanding financial statements and corporate annual reports. Philadelphia: Chilton, 1961. Pp. vii, 135. \$3.95.
- HUNT, P., WILLIAMS, C. M. AND DONALDSON, G. Basic business finance—text and cases. Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. xiv, 946. \$7.95.
- MAGEE, J. H. General insurance. 6th ed. Homewood, Ill.: Irwin, 1961. Pp. xiv, 890. \$7.95.

- ORTH, L. Die kurzfristige Finanzplanung industrieller Unternehmungen. Cologne and Opladen: Westdeutscher Verlag, 1961. Pp. x, 185. DM 23.60.
- PLUM, L. V., HUMPHREY, J. H. AND BOWYER, J. W. Investment analysis and management. Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. xii, 516. \$7.95.
- PRATHER, C. L. Financing business firms. Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. xi, 668. \$7.50.
- SIMHA, S. L. N. The capital market of India. Bombay: Vora, 1960. Pp. xi, 300. \$5.
- SUR, A. K. The new issue market and the stock exchange—a study in the theory and working of the Securities Market in India. Research pub. no. 5. Calcutta: Indian Inst. of Soc. Welfare & Bus. Management; Chuckerverty, Chatterjee, distrib., 1961. Pp. ix, 179. Rs 12.50.
- WALKER, E. W. AND BAUGHN, W. H. Financial planning and policy. New York: Harper, 1961. Pp. xiv, 506. \$8.
- Deutsche Forschungsgemeinschaft: Aufgaben und Finanzierung. Wiesbaden: Steiner, 1961. Pp. 87.
- The insurance industry: insurance rates, rating organizations and state rate regulation—report of the Senate Committee on the Judiciary together with individual views made by its Subcommittee on Antitrust and Monopoly. Washington: Supt. Docs., 1961. Pp. 172.

Business Organization; Managerial Economics; Marketing; Accounting

- ARGYRIS, C. Understanding organizational behavior. Homewood, Ill.: Dorsey Press, 1960. Pp. xii, 179. \$5.
- BELLINGER, B., ed. Gegenwartsfragen der Unternehmung. Offene Fragen der Betriebswirtschaftslehre. (Festschrift zum 70. Geburtstag von Fritz Henzel, gewidmet von Kollegen, Freunden und Schülern.) Wiesbaden: Gabler, 1961. Pp. 251. DM 22.50.
- BUSKIRK, R. H. Cases and readings in marketing. New York: Holt, Rinehart and Winston, 1961. Pp. xi, 208. Paper, \$2.25.
- CAMPBELL, R. H. Carron Company. Edinburgh and London: Oliver and Boyd, 1961. Pp. xii, 346. 30s.
- CHARNES, A. AND COOPER, W. W. Management models and industrial applications of linear programming. 2 vol. New York: Wiley, 1961. Pp. xxiii, 467; xxi, 391. \$11.75 each.
- COLLEY, R. H. Defining advertising goals for measured advertising results. New York: Assoc. of Nat. Advertisers, 1961. Pp. xiv, 114.
- DORN, G. Die Entwicklung der industriellen Kostenrechnung in Deutschland. Berlin: Duncker & Humblot, 1961. Pp. 232. DM 28.60.
- EKAMBARAM, S. K. The statistical basis of quality control charts—a manual for business and factory managers. New York: Asia Pub. House; Taplinger, distrib., 1960. Pp. x, 96. \$2.75.
- FEIGENBAUM, A. V. Total quality control: engineering and management—the technical and managerial field for improving product quality, including its reliability, and for reducing operating costs and losses. New York: McGraw-Hill, 1961. Pp. xi, 627. \$11.
- FORRESTER, J. W. Industrial dynamics. Cambridge: M.I.T. Press; New York: Wiley, 1961. Pp. xv, 464. \$18.
- FOULKE, R. A. Practical financial statement analysis. 5th ed. New York: McGraw-Hill, 1961. Pp. xxi, 713. \$8.95.
- HATZOLD, O. AND HELMSCHROTT, H. Analyse unternehmerischer Verhaltensweisen: Untersuchungen anhand von Konjunkturtestdaten. Berlin: Duncker & Humblot, 1961. Pp. 103.
- HONKO, J. AND VUORI, L. Sekatavara- ja tekstiilialan yksityisten vähittäiskauppaliikkeiden kannattavuus v. 1960. (The returns of general and textile merchandise retail trade in 1960—summary.) Helsinki: Liiketaloustieteellinen Tutkimuslaitos, 1961. Pp. 45.

- HUMMEL, F. E. Market and sales potentials. New York: Ronald Press, 1961. Pp. vi, 310. \$7.50.
- KENDRICK, J. W. AND CREAMER, D. Measuring company productivity—handbook with case studies. Stud. in bus. econ., no. 74. New York: Nat. Indus. Conf. Board, 1961. Pp. 110. \$2.50; \$12.50, non-Associates.
- LAUTERBACH, A. Managerial attitudes in Chile. Inst. Econ. pub. no. 42 (English version of pub. no. 32). Santiago: Inst. Econ. Univ. Chile, 1961. Pp. vii, 196.
- LINDFORS, G. V., comp. Intercollegiate bibliography: cases in business administration. Vol. 6. Boston: Intercollegiate Case Clearing House, for Intercollegiate Contributors and the American Assoc. of Collegiate Schools of Bus., 1961. Pp. xvi, 149.
- MEY, J. L., ed. Depreciation and replacement policy. Chicago: Quadrangle Books, 1961. Pp. 235.
- NOVICK, D. System and total force cost analysis. USAF project RAND, RM-2695. Santa Monica: RAND, 1961. Pp. xiii, 141.
- OXENFELDT, A. R. Pricing for marketing executives. San Francisco: Wadsworth, 1961. Pp. v, 90.
 "This book is addressed to three audiences: students in basic marketing courses; students of elementary economics; and business executives with marketing responsibilities. . . . Although it does not contain anything altogether new, it does summarize some new concepts and approaches that are scattered in the business press and in periodicals." (From the author's preface.)
- RAFFÉE, H. Kurzfristige Preisuntergrenzen als betriebswirtschaftliches Problem (prinzipielle Bestimmungsmöglichkeiten von kosten-, ertrags- und finanzwirtschaftlichen Preisuntergrenzen). Cologne and Opladen: Westdeutscher Verlag, 1961. Pp. 203. DM 22.50.
- ROBINSON, C. Understanding profits. Princeton: Van Nostrand, 1961. Pp. xvii, 517. \$13.75.
- SCHNEIDER, D. Die wirtschaftliche Nutzungsdauer von Anlagegütern—als Bestimmungsgrund der Abschreibungen. Cologne and Opladen: Westdeutscher Verlag, 1961. Pp. xii, 171. DM 22.50.
- SOLDOFSKY, R. M. Lectures in financial management. 3rd ed. Iowa City: Hawkeye Book Store, distrib., 1961. Pp. 242.
- SPURR, W. A., KELLOGG, L. S. AND SMITH, J. H. Business and economic statistics. Rev. ed. Homewood, Ill.: Irwin, 1961. Pp. xi, 560. \$7.95.
- TAYLOR, W. J. AND SHAW, R. T. Marketing. Cincinnati: South-Western Pub. Co., 1961. Pp. vi, 710. \$7.75.
- WARSHAW, M. R. Effective selling through wholesalers. Michigan bus. stud. 15(4). Ann Arbor: Bur. Bus. Research, School of Bus. Admin., Univ. of Michigan, 1961. Pp. vii, 192.
- WENGERT, E. S., HARWOOD, D. S., JR., MARQUIS, L. AND GOLDEHAMMER, K. The study of administration. Eugene: Univ. of Oregon, School of Bus. Admin., 1961. Pp. 149.
- WIKSTROM, W. S., comp. and ed. Developing better managers: an eight-nation study. New York: Nat. Indus. Conf. Board, 1961. Pp. 182. \$4; \$20, non-Associates.

Industrial Organization; Government and Business; Industry Studies

- BALDWIN, W. L. Antitrust and the changing corporation. Durham: Duke Univ. Press, 1961. Pp. vi, 307. \$8.75.
- GOODRICH, C., RUBIN, J., CRANMER, H. J. AND SEGAL, H. H. Canals and American economic development. New York: Columbia Univ. Press, 1961. Pp. viii, 303.
- HANSON, A. H. Parliament and public ownership. New York: Oxford Univ. Press; London: Cassell for The Hansard Society, 1961. Pp. 248. \$4.80.
- NEUMARK, F., ED. Die Konzentration in der Wirtschaft. Verhandlungen auf der Tagung des Vereins für Sozialpolitik Gesellschaft für Wirtschafts- und Sozialwissenschaften in Bad Kissingen 1960. Berlin: Duncker & Humblot, 1961. Pp. 395. DM 36.60.

- RÖCHLING, E. Die eisenschaffende Industrie an der Saar im Montandreieck. Kieler stud. n. s. no. 18. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1961. Pp. 28.
- RUBIN, J. Canal or railroad? Imitation and innovation in the response to the Erie Canal in Philadelphia, Baltimore, and Boston. Transactions of the American Philosophical Society. N.s. 51, pt. 7. Philadelphia: Am. Philosoph. Soc., 1961. Pp. 106. \$2.50.
- SEEMANN, K. Die Verwaltungspraxis des Bundeskartellamtes zu den Höherstufigen Rationalisierungskartellen nach § 5 Absatz 2 und 3 GWB. Cologne: Westdeutscher Verlag, 1961. Pp. 53. Paper, DM 8.50.
- SHOTT, J. G. Progress in piggyback and containerization. Washington: Public Affairs Inst., 1961. Pp. iv, 67. 50¢.
- TORO, C. E. AND DOWD, L. P. ASSISTED BY OTHERS. The St. Lawrence Seaway. Michigan bus. rept. internat. ser. no. 37. Ann Arbor: Bur. Bus. Research, School of Bus. Admin., Univ. of Michigan, 1961. Pp. xii, 66. \$2.
- Auto financing legislation. Hearings before the Antitrust Subcommittee of the House Committee on the Judiciary, 87th Cong., 1st sess., June 7-30, 1961. 2 pts. Washington: Supt. Docs., 1961. Pp. 863; 964.
- Drug industry antitrust act. Pt. 1, A.M.A. and medical authorities. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 87th Cong., 1st sess., July 5-25, 1961. Washington: Supt. Docs., 1961. Pp. 457.
- Seventy-fourth annual report on transport statistics in the United States for the year ended December 31, 1960. Pt. 1, Railroads. Pt. 2, The Pullman Company. Pt. 3, Railway Express Agency, Inc. Pt. 4, Electric railways. Pt. 6, Oil pipe lines. Washington: Bur. Transport Econ. and Stat., Interstate Commerce Commission, 1961. Pp. 456; 2; 4; 22; 37. \$4.25 per year.
- Survey of manufacturing activity in Australia June, 1961. Canberra: Industries Div., Dept. of Trade, 1961. Pp. xv, 82. Not for sale.
- Taxation of exchanges and distributions pursuant to antitrust decrees. Hearing before the House Committee on Ways and Means, 87th Cong., 1st sess., Aug. 24, 1961. Washington: Supt. Docs., 1961. Pp. 490.
- Voprosy ekonomiki transporta, sbornik statey. (Questions of the economics of transportation.) Riga: Latvian Acad. of Sci., 1961. Pp. 253.

Land Economics; Agricultural Economics; Economic Geography; Housing

- AVERITT, P. Coal reserves of the United States—a progress report January 1, 1960: a summary of information concerning the quantity and distribution of coal. Washington: Supt. Docs., 1961. Pp. 116.
- CALEF, W. C. Private grazing and public lands—studies of the local management of the Taylor grazing act. Chicago: Univ. of Chicago Press, 1960. Pp. 292.
- DALRYMPLE, D. G. Marx and agriculture: the Soviet experience. East Lansing: Dept. of Agric. Econ., Michigan State Univ., 1961. Pp. 22.
- DEVÈZE, M. La vie de la forêt française au XVI^e siècle. Vol. 1 and 2. Paris: S.E.V.P.E.N., 1961. Pp. 325; 473.
- HUBBARD, P. J. Origins of the TVA—the Muscle Shoals controversy, 1920-1932. Nashville: Vanderbilt Univ. Press, 1961. Pp. ix, 340. \$6.
- KHUSRO, A. M. AND AGARWAL, A. N. The problem of co-operative farming in India. New York: Asia Pub. House; Taplinger, distrib., 1961. Pp. viii, 140. \$2.75.
- KOHN, C. F., ed. Urban responses to agricultural change. A collection of papers published under the sponsorship of the Committee on Urban Economic and Social Development of Iowa, State University of Iowa. Iowa City: Dept. of Pub., State Univ. of Iowa, 1961. Pp. viii, 207. \$4.

- McCABE, R. Agriculture's role in the 1960 decade. Report of the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. vi, 74. 25¢.
- MUJUMDAR, N. A. Some problems of underemployment—an analytical study of underemployment in the agricultural sector. Bombay: Popular Book Depot, 1961. Pp. xiii, 338. Rs 25.
- OKHAPKIN, K. A. The economic effectiveness of cash wages on Kolkhozes. Washington: Joint Pub. Research Svce., 1961. Pp. 182.
- PERLOFF, H. S. A national program of research in housing and urban development—the major requirements and a suggested approach. Washington: Resources for the Future, 1961. Pp. 32. 50¢.
- SOBOLEV, N. P. Khosraschet v kolkhosakh. (Economic calculation on collective farms.) Moscow: Pub. House for Agric. Econ., 1961. Pp. 224.
- SOVANI, N. V. AND RATH, N. Economics of a multiple-purpose river dam—report of an inquiry into the economic benefits of the Hirakud Dam. Bombay: Asia Pub. House for Gokhale Inst. of Pol. & Econ.; New York: Taplinger, distrib., 1960. Pp. xvi, 389. \$7.
- STODDARD, C. H. The small private forest in the United States. Washington: Resources for the Future, 1961. Pp. x, 171. \$2.
- TEITELBAUM, P. D. Energy production and consumption in the United States: an analytical study based on 1954 data. Washington: Bureau of Mines, 1961. Pp. 145.
- YEARLY, C. K., JR. Enterprise and anthracite: economics and democracy in Schuylkill County, 1820-1875. Baltimore: Johns Hopkins Press, 1961. Pp. 254. \$5.
- Ends and means of urban renewal—papers from the Philadelphia Housing Association's Fiftieth Anniversary Forum. Philadelphia: Philadelphia Housing Assoc., 1961. Pp. 102. \$2; free to members.
- Equalize livestock marketing competition. Hearings before the Subcommittee on Livestock and Feed Grains of the House Committee on Agriculture, 87th Cong., 1st sess., Aug. 23 and 24, 1961. Washington: Supt. Docs., 1961. Pp. 118.
- Notes on the agricultural economies of the 20 Latin American Republics. [Washington]: Econ. Research Svce., [1961]. Pp. 86.

Labor Economics

- ALLEN, R. A. East Texas lumber workers—an economic and social picture, 1870-1950. Austin: Univ. of Texas Press, 1961. Pp. x, 239. \$5.
- BAJT, A. Produktivnost rada. (Labor productivity.) Belgrade: Nolit, 1960. Pp. 360.
- BARBASH, J. Labor's grass roots—a study of the local union. New York: Harper, 1961. Pp. vii, 250. \$4.95.
- BOWMAN, R. T. AND MARTIN, M. E. Special report on unemployment statistics—meaning and measurement. Washington: Bur. Budget, Office of Stat. Standards, 1961. Pp. 18.
- CHEIT, E. F. Injury and recovery in the course of employment. New York: Wiley, 1961. Pp. xviii, 377. \$11.95.
- DAYKIN, W. L. Legal issues in labor relations—a collection of articles. Reprint ser. no. 13. Iowa City: Bur. of Labor and Management, College of Bus. Admin., State Univ. of Iowa, 1961. Pp. 64.
- FLAGLER, J. J. Building the local union education program. Info. ser. no. 4. Iowa City: Bur. Labor and Management, College of Bus. Admin., State Univ. of Iowa, 1961. Pp. 28. 50¢.
- GAVETT, T. W. Wage differentials in West Virginia. Bus. and econ. stud. Vol. 7(4). Morgantown: Bur. of Bus. Research, College of Commerce, West Virginia Univ., 1961. Pp. 50.
- GERN, J.-P. L'indexation des salaires—ses répercussions économiques. Neuchâtel: Baconnière, 1961. Pp. 198.

- HOFFMANN, W. G. *Die branchenmässige Lohnstruktur der Industrie: Ein intertemporaler und internationaler Vergleich*. Tübingen: J.C.B. Mohr (Paul Siebeck), 1961. Pp. 191. DM 23.50; Paper, DM 19.50.
- HOVNE, A. *The labor force in Israel*. Jerusalem: Falk Project for Econ. Research in Israel, 1961. Pp. xii, 88, \$2.
- KUCZYNSKI, J. *Die Geschichte der Lage der Arbeiter unter dem Kapitalismus*. Pt. 1, *Die Geschichte der Lage der Arbeiter in Deutschland von 1789 bis zur Gegenwart*. Vol. 1, *Darstellung der Lage der Arbeiter in Deutschland von 1789 bis 1849*. Berlin: Akademie-Verlag, 1961. Pp. viii, 128. DM 27.
- KUHN, J. W. *Bargaining in grievance settlement—the power of industrial work groups*. New York: Columbia Univ. Press, 1961. Pp. xii, 206.
- KUMAR, C. G. *Development of industrial relations in India*. Bombay: Orient Longmans, 1961. Pp. xv, 250. Rs 15.
- MORGAN, C. A. *Labor economics*. Homewood, Ill.: Dorsey Press, 1962. Pp. xii, 657. \$8.
- PETERSON, C. A. *An Iowa commuting pattern and labor market areas in general*. Research ser. no. 23. Iowa City: State Univ. of Iowa, Bur. of Lab. and Management, College of Bus. Admin., 1961. Pp. 28.
- STONE, M. *Labor-management contracts at work—analysis of awards reported by the American Arbitration Association*. New York: Harper, 1961. Pp. viii, 307. \$5.50.
- THORNHILL, J. N. *Strikes in the plastics industry*. Ruston: Dept. of Bus. and Econ. Research, School of Bus. Admin., Louisiana Polytechnic Inst., 1961. Pp. 21.
- TROY, L. *Local independent unionism: two case studies*. New Brunswick: Inst. of Management and Labor Rel., Rutgers—The State Univ., 1961. Pp. 32. \$1.
- VOLKOV, F. M. *Rasshirennoe vosproizvodstvo kvalifitsirovannoy rabochey sily v SSSR*. (Multiplying skilled labor in the USSR.) Moscow: Sotsekgiz, 1961. Pp. 206.
- ZABELIN, N. N. and others. *Planning, training and allocation of manpower in the USSR*. Joint Pub. Research Svce. no. 8916. Washington: Supt. Docs., 1961. Pp. 223.
- To amend the Welfare and Pension Plans Disclosure Act. Hearing before the Subcommittee on Labor of the Senate Committee on Labor and Public Welfare, 87th Cong., 1st sess., July 31, 1961. Washington: Supt. Docs., 1961. Pp. 229.
- Employment and earnings statistics for the United States 1909-60. Revised on the basis of the 1957 Standard Industrial Classification. Bur. Labor Stat., Dept. of Labor bull. no. 1312. Washington: Supt. Docs., 1961. Pp. x, 546.
- Higher unemployment rates, 1957-60: structural transformation or inadequate demand. Report of the Subcommittee on Economic Statistics of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. vii, 79. 25¢.
- Labor productivity in industry 1958-59. Washington: Joint Pub. Research Svce., 1961. Pp. 238.
- New 1961 minimum wage law with explanation. Fair labor standards act with 1961 amendments signed into law by the President May 5, 1961. New York: Commerce Clearing House, 1961. Pp. 128.
- Ocupación y desocupación—Gran Santiago, Concepción—Junio 1961. Inst. Econ. pub. no. 41. Santiago: Inst. Econ., Univ. Chile, 1961. Pp. vii, 41.
- A profile of the Teamsters Union. IRM no. 140. New York: Indus. Rel. Counselors, 1961. Pp. 47. \$1.50.
- State hour laws for women. Bull. no. 277. Washington: Women's Bur., 1961. Pp. 105.
- Symposium on profit sharing and productivity motivation February 23-24, 1961, Wing-spread, Racine, Wisconsin. Madison: Center for Productivity Motivation, School of Commerce, Univ. of Wisconsin, 1961. Pp. 60.
- On the tenth anniversary of ORIT and before its 5th continental congress. (Origins and founding of the Hemispheric Free Trade Union Center. Its activities. Reasons for its Inter-Americanism. Its economic and social principles. Agrarian reform. Support of

- democracy and the struggle against dictatorships. Hemispheric labor unity.) Mexico City: ORIT Press and Pub. Dept., 1961. Pp. 65. 25¢.
- Trade unions and people of Cuba against despotism. (Enlarged edition of the pamphlet published in October 1960 under the title "The Cuban Trade Union Movement under the Regime of Dr. Castro"). Mexico City: ORIT Press and Pub. Dept., 1961. Pp. 64. 20¢.
- Unemployment: terminology, measurement, and analysis. Report of the Subcommittee on Economic Statistics of the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. vii, 113. 35¢.

Population; Welfare Programs; Consumer Economics

- BURK, M. Influences of economic and social factors on U. S. food consumption. Minneapolis: Burgess, 1961. Pp. ii, 135. \$3.75.
- CORBETT, R. M. Pension trends and the self-employed. New Brunswick: Rutgers Univ. Press, 1961. Pp. xii, 156. \$4.50.
- LEES, D. S. Health through choice—an economic study of the British National Health Service. Hobart paper no. 14. London: Inst. of Econ. Affairs, 1961. Pp. 64. Paper, 7s. 6d.
- LOPEZ, A. Problems in stable population theory. Princeton: Office of Population Research, Princeton Univ., 1961. Pp. ix, 107. \$4.
- McNULTY, J. E., JR. Decision and influence processes in private pension plans. Homewood, Ill.: Irwin for Pension Research Council, Wharton School of Fin. and Commerce, Univ. of Pennsylvania, 1961. Pp. xiv, 128. \$5.
- PICKRELL, J. F. Group health insurance. Rev. ed. Homewood, Ill.: Irwin for S. S. Huebner Foundation for Insurance Ed., Univ. of Pennsylvania, 1961. Pp. xix, 221. \$5.75.
- RIVLIN, A. M. The role of the federal government in financing higher education. Washington: Brookings Inst., 1961. Pp. xii, 179. \$3; paper, \$2.
- Appraisal of the safety of chemicals in foods, drugs and cosmetics, by the staff of the Division of Pharmacology, Food and Drug Administration, Dept. of Health, Education and Welfare. Austin: Editorial Com., Assoc. of Food & Drug Officials of the U.S., 1959. Pp. 107.
- Family living studies—a symposium. Stud. and rept. n.s. no. 63. Geneva: Internat. Lab. Office, 1961. Pp. 280. \$2.50.
- Report of Advisory Group on the Social Security Administration Research Program—supplement: a review of the current research and statistics program of the Social Security Administration. Prepared by B. Bernstein, consultant. Washington: Dept. of Health, Education, and Welfare, Soc. Security Admin., 1960. Pp. 63.
- A research program for the Social Security Administration. Report of Advisory Group to the Commissioner of Social Security, Dept. of Health, Education, and Welfare, Social Security Administration. Washington: Supt. Docs., 1961. Pp. 30. 20¢.
- Selected references on aging. Dept. Health, Education, and Welfare. Washington: Supt. Docs., 1959. Pp. 110.

Related Disciplines

- ADLER, M. J. The idea of freedom. Vol. 2, A dialectical examination of the controversies about freedom. Garden City: Doubleday, 1961. Pp. x, 754. \$7.50.
- AYRES, C. E. Toward a reasonable society—the values of industrial civilization. Austin: Univ. of Texas Press, 1961. Pp. 301. \$4.75.
- BENTON, W. The voice of Latin America. New York: Harper, 1961. Pp. xix, 204. \$3.95.
- CHRISTMAN, H. M., ed. Walter P. Reuther selected papers. New York: Macmillan, 1961. Pp. xi, 330. \$5.95.

- DU PONT, V. M. *Journey to France and Spain 1801*. Ed. by C. W. David. Ithaca: Cornell Univ. Press, 1961. Pp. xxvi, 144. \$3.50.
- ELDER, R. E. *The foreign leader program—operations in the United States. A study made at the request of the Department of State*. Washington: Brookings Inst., 1961. Pp. xii, 115. Paper, \$2.
- ENGLER, R. *The politics of oil—a study of private power and democratic directions*. New York: Macmillan, 1961. Pp. viii, 565. \$7.50.
- ESMAN, M. J. *Needed: an education and research base to support America's expanded commitments overseas*. Pittsburgh: Univ. of Pittsburgh Press, 1961. Pp. xi, 46. Paper, \$1.50.
- FERTIG, L. *Prosperity through freedom*. Chicago: Regnery, 1961. Pp. ix, 278. \$3.95.
- HAY, D. *The Italian Renaissance in its historical background*. New York: Cambridge Univ. Press, 1961. Pp. xii, 218. \$5.50.
- HUNTINGTON, S. P. *The common defense—strategic programs in national politics*. New York: Columbia Univ. Press, 1961. Pp. xix, 500. \$8.75.
- HUTCHINS, R. M. AND ADLER, M. J., ed. *The great ideas today 1961*. Chicago: Encyclopaedia Britannica, 1961. Pp. xi, 562. \$8.95.
- O'NEAL, F. H. AND DERWIN, J. *Expulsion or oppression of business associates—"Squeeze-outs" in small enterprises*. Durham: Duke Univ. Press, 1961. Pp. xii, 263. \$10.
- RAY, D. P., ed. *Trends in social science*. New York: Philos. Lib., 1961. Pp. 169. \$4.75.
- SHANKS, M. *The stagnant society—a warning*. Baltimore: Penguin Books, 1961. Pp. 236. Paper, 95¢.
- TOLLIVER, W. E. *Summary report on survey of students enrolled for advanced degrees: fall 1960*. Washington: U. S. Dept. of Health, Education, and Welfare, Office of Education, 1961.
- WHITE, F. A. *American industrial research laboratories*. Washington: Public Affairs Press, 1961. Pp. xii, 227. \$6.
- WOOD, B. *The making of the Good Neighbor policy*. New York: Columbia Univ. Press, 1961. Pp. x, 438. \$7.50.
- WOYTINSKY, W. S. *Stormy passage—a personal history through two Russian revolutions to democracy and freedom: 1905-1960*. New York: Vanguard Press, 1961. Pp. xxii, 550. \$10.
- ZEIGLER, H. *The politics of small business*. Washington: Public Affairs Press, 1961. Pp. vii, 150. \$3.25.
- The study of public problems—a report on activities of the Brookings Institution 1954-1961*. Washington: Brookings Inst., 1961. Pp. xiii, 154.
- Summary report on Bachelor's and higher degrees conferred during the year 1959-60*. Washington: U. S. Dept. of Health, Education, and Welfare, Office of Education, 1961. Pp. 8.

PERIODICALS

General Economics; Methodology

- ALBERT, H. Die Problematik der ökonomischen Perspektive. *Zeitschr. f. die ges. Staatswiss.*, Oct. 1961, pp. 438-67.
- BERNARDELLI, H. The origins of modern economic theory. *Econ. Record*, Sept. 1961, pp. 320-38.
- CABRERA KABANA, M. Las funciones de las matemáticas en el análisis económico. *Moneda y Crédito*, Mar. 1961, pp. 41-57.
- CASTELLANO, C. Problemi di politica economica. *Annali Fac. di Econ. e Com.*, 1961, 15 (1), pp. 1-22.
- CHERUBINO, S. La metodologia dell'economia astratta. *Riv. di Pol. Econ.*, Aug.-Sept. 1961, pp. 1637-53.
- DE FIGUEROA, E. La política económica y el bienestar social. (With English summary.) *Rev. de Est. Pol.*, May-Aug. 1961, pp. 141-62.
- FELS, R. Measuring the success of the elementary course: comment. *Am. Econ. Rev.*, Dec. 1961, pp. 1044-77.
- KNIRSCH, P. Ideologische Einflüsse auf die Entwicklung der sowjetischen Wirtschaftswissenschaft der Gegenwart. *Schmollers Jahrb.*, 1961, 81 (5), pp. 27-51.
- SCHNEIDER, E. Avances de la teoría económica en nuestro tiempo. *Moneda y Crédito*, Mar. 1961, pp. 3-12.
- SHACKLE, G. L. S. The ruin of economy. *Kyklos*, 1961, 14 (4), pp. 482-96.
- SYLOS-LABINI, P. Premesse concrete e ipotesi teoriche nell'analisi economica. *Giorn. d. Econ.*, May-June 1961, pp. 369-84.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- AALTONEN, A. O. Loppuunmyyntihinnoista Liiketaloudellinen Aikakauskirja, 1961, 2, pp. 102-116.
- ABAY-NEUBAUER, J. Der wirtschaftliche Kreislauf auf geldlicher und sachlicher Grundlage. *Schmollers Jahrb.*, 1961, 81 (5), pp. 63-94.
- AMATO, V. Rappresentazione matriciale del "moltiplicatore" dinamico. *L'industria*, 1961, 3, pp. 367-79.
- ARROW, K., CHENERY, H. B., MINHAS, B. AND SOLOW, R. M. Capital-labor substitution and economic efficiency. *Rev. Econ. Stat.*, Aug. 1961, pp. 225-50.
- BALL, R. J. AND SMOLENSKY, E. The structure of multiplier-accelerator models of the United States economy, 1909-1951. *Internat. Econ. Rev.*, Sept. 1961, pp. 294-329.
- BECKER, G. Marktteilnahme als Verhaltensproblem. *Jahrb. f. Sozialwissenschaft.*, 1961, 12 (2), pp. 163-98.
- BOUCHARD, M. De la concurrence. *Écon. Appliquée*, Jan.-Mar. 1961, pp. 5-26.
- BROWN, M. Overinvestment during prosperity. *Econ. Jour.*, Sept. 1961, pp. 544-59.
- BROZEN, Y. The future of industrial research. *Jour. Bus. Univ. Chicago*, Oct. 1961, pp. 434-41.
- BRUTON, H. J. Two new growth models. *Indian Econ. Jour.*, July 1961, pp. 75-84.
- BURSTEIN, M. L. The measurement of quality changes in consumer durables. *Man. School Econ. Soc. Stud.*, Sept. 1961, pp. 267-80.
- BUSCARINO, G. Considerazioni sui rinnovi di capitale fisso secondo una odierna teoria. Problema di velocità e problema di massimo. *Studi Econ.*, May-Aug. 1961, pp. 297-316.

- CASTELLANO, C. La struttura economica in uno spazio nazionale. (With English summary.) Riv. Internaz. di Sci. Econ. e Com., Aug. 1961, pp. 746-69.
- CHERUBINO, S. Considerazioni su alcune nozioni fondamentali dell'economia e sul saggio di sviluppo. L'industria, 1961, 3. pp. 337-66.
- COLE, H. J. D., HOLLAND, D. G. AND POSNER, M. V. Factory productivity and efficiency, III. Bull. Oxford Univ. Inst. Stat., Aug. 1961, pp. 197-270.
- CREMONA DELLACASA, D. Note sulle curve d'indifferenza. Giorn. d. Econ., July-Aug. 1961, pp. 482-504.
- DELETAILE, E. Croissance et cycles économiques. Cahiers Econ. de Bruxelles, July 1961, pp. 421-30.
- EDWARDS, E. O. An indifference approach to the theory of the firm. So. Econ. Jour., Oct. 1961, pp. 123-29.
- FISK, P. R. The graduation of income distributions. Econometrica, Apr. 1961, pp. 171-85.
- FLEMING, M. Cost-induced inflation and the quantity theory of money. Econ. Jour., Sept. 1961, pp. 512-20.
- FOG, B. Deskriptiv pristeori I: virksomhedernes målsætning og prisfastsættelse. Nationaløk. Tids., 1961, 99 (1-2), pp. 75-82.
- FOSSATI, E. Algunas notas sobre economía y econometría. Rev. de Econ. Pol. (Madrid), Sept.-Dec. 1961, pp. 699-742.
- FREEMAN, J. F., AND LEE, W. T. Establishment of an absolute ruble value for the Soviet statistical concept, the "gross output of industry." Soviet Stud., Oct. 1961, pp. 172-86.
- FRISCH, R. A reconsideration of Domar's theory of economic growth. Econometrica, July 1961, pp. 406-13.
- GÄFGEN, G. Die kurzfristige Diagnose von Inflationsursachen. Zeitschr. f. die ges. Staatswiss., Oct. 1961, pp. 468-93.
- GORDON, R. A. Differential changes in the prices of consumers' and capital goods. Am. Econ. Rev., Dec. 1961, pp. 937-57.
- GRUBER, U. Zur Frage der Gesamtgrößenbetrachtung bei Marx und Keynes. Jahrb. f. Nationalök. und Stat., Sept. 1961, pp. 313-42.
- GRÜNBAUM, I. Forsøg med en profit—multiplier vækstmodel. Nationaløk. Tids., 1961, 99 (1-2), pp. 40-74.
- HERLITZ, L. The tableau économique and the doctrine of sterility. Scan. Econ. Hist. Rev., 1961, 9 (1), pp. 3-55.
- HIRSCH, W. Z. Income elasticity of public education. Internat. Econ. Rev., Sept. 1961, pp. 330-39.
- HOOVER, E. D. The CPI and problems of quality change. Mo. Lab. Rev., Nov. 1961, pp. 1175-85.
- JOHANSEN, L. Durability of capital and rate of growth of national product. Internat. Econ. Rev., Sept. 1961, pp. 361-70.
- JOHNSON, H. G. Keynes' *General Theory* after twenty-five years. Hong Kong Econ. Papers, June 1961, pp. 33-51.
- JORGENSEN, D. W. The structure of multi-sector dynamic models. Internat. Econ. Rev., Sept. 1961, pp. 276-93.
- JOSSA, B. Risparmio, investimento e livello generale dei prezzi. Econ. Internaz., Aug. 1961, pp. 432-40.
- KINDLEBERGER, C. P. Obsolescence and technical change. Bull. Oxford Univ. Inst. Stat., Aug. 1961, pp. 281-98.
- KOPONEN, V. Lihajalosteiden kysynnän analysointia. (With English summary.) Liiketaloudellinen Aikakauskirja, 1961, 2, pp. 140-51.

- LERNER, A. P. A note on the rate of interest and the value of assets. *Econ. Jour.*, Sept. 1961, pp. 539-43.
- LOVELL, M. Manufacturers' inventories, sales expectations, and the acceleration principle. *Econometrica*, July 1961, pp. 293-314.
- MACESICH, G. Current inflation theory: considerations on methodology. *Soc. Research*, Autumn 1961, pp. 321-30.
- MARRAMA, V. Una nota sui rapporti fra stabilità economica e consumo di beni durevoli. *Giorn. d. Econ.*, July-Aug. 1961, pp. 450-63.
- MARTY, A. L. A geometrical exposition of the Keynesian supply function. *Econ. Jour.*, Sept. 1961, pp. 560-65.
- MARX, A. Die expansive Lohnpolitik in betriebswirtschaftlicher Sicht. *Liiketaloudellinen Aikakauskirja*, 1961, 2, pp. 89-101.
- MERRETT, A. AND SYKES, A. The rate of interest and the timing of capital projects. *Man. School Econ. Soc. Stud.*, Sept. 1961, pp. 233-48.
- MORGAN, D. J. Economic welfarism and public policy. *Kyklos*, 1961, 14 (4), pp. 575-88.
- MORISHIMA, M. AND SETON, F. Aggregation in Leontief matrices and the labour theory of value. *Econometrica*, Apr. 1961, pp. 203-20.
- MUTH, J. F. Rational expectations and the theory of price movements. *Econometrica*, July 1961, pp. 315-35.
- NEWMAN, P. Basic assumptions in preference theory. *Econ. Jour.*, Sept. 1961, pp. 535-38.
- OLDAK, P. Toward a critique of the modern Keynesian concept of the business cycle. *Prob. Econ.*, Aug. 1961, pp. 43-52.
- O'LOUGHLIN, C. Problems in the economic development of Antigua. *Soc. Econ. Stud.*, Sept. 1961, pp. 237-277.
- PALOMBA, G. La nuova concezione del saggio d'interesse. *Giorn. d. Econ.*, July-Aug. 1961, pp. 405-16.
- PAPI, G. U. Acerca de algunos orígenes de las presiones inflacionísticas. *Rev. de Econ. y Estad.*, 1960, 4 (1, 2, 3, 4), pp. 25-54.
- PEARCE, I. F. A method of consumer demand analysis illustrated. *Economica*, Nov. 1961, pp. 371-94.
- PHILLIPS, A. W. A simple model of employment, money and prices in a growing economy. *Economica*, Nov. 1961, pp. 360-70.
- QUIRIN, G. D. Simple market games and neo-classical models. *Zeitschr. f. Nationalökon.*, Sept. 1961, pp. 177-86.
- ROBINSON, J. Own rates of interest. *Econ. Jour.*, Sept. 1961, pp. 596-600.
- RØDSETH, T. Momenter til etterspørselsteorien for varige forbruksvarer. *Statsøkonomisk Tids.*, Sept. 1961, pp. 91-111.
- SATO, K. Price-cost structure and behavior of profit margins. *Yale Econ. Essays*, Fall 1961, pp. 361-425.
- SCHLEEHAUF, U. Der Zweipersonenmarkt als Spielkombination. *Zeitschr. f. Nationalökon.*, Sept. 1961, pp. 187-203.
- SEN, A. K. On optimising the rate of saving. *Econ. Jour.*, Sept. 1961, pp. 479-96.
- SHEARER, R. A. The concept of economic growth. *Kyklos*, 1961, 14 (4), pp. 497-532.
- SINGER, M. Cumulative causation and growth economics. *Kyklos*, 1961, 14 (4), pp. 533-47.
- SONO, M. The effect of price changes on the demand and supply of separable goods. *Internat. Econ. Rev.*, Sept. 1961, pp. 239-71.
- STEIN, J. L. The simultaneous determination of spot and futures prices. *Am. Econ. Rev.*, Dec. 1961, pp. 1012-25.
- STEKLER, H. O. Forecasting industrial production. *Jour. Am. Stat. Assoc.*, Dec. 1961, pp. 869-77.

- TARSEHS, L. The elasticity of the marginal efficiency function. *Am. Econ. Rev.*, Dec. 1961, pp. 958-85.
- TINBERGEN, J. The 'best' economic order. *Hong Kong Econ. Papers*, June 1961, pp. 1-7.
- TONIOLLI, M. A. L'imputazione sotto il profilo della causalità produttiva. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Oct. 1961, pp. 956-79.
- TREZZA, B. Acceleratore e modelli di sviluppo economico. *Riv. di Pol. Econ.*, Aug.-Sept. 1961, pp. 1654-74.
- TURETSKII, S. Problems of distribution and price formation. *Prob. Econ.*, Sept. 1961, pp. 28-39.
- VAN WATERSCHOOT, J. Het weerbarstig begrip economische structuur. *Tijdschrift v. Econ.*, 1961, 6 (3), pp. 317-38.
- WEISBROD, B. A. The valuation of human capital. *Jour. Pol. Econ.*, Oct. 1961, pp. 425-36.
- YORDON, W. J. Industrial concentration and price flexibility in inflation: price response rates in fourteen industries, 1947-1958. *Rev. Econ. Stat.*, Aug. 1961, pp. 287-94.
- ZACCAGNINI, E. Gradus ad parnassum, IV. *Giorn. d. Econ.*, May-June 1961, pp. 347-68.
- ZLATIEV, J. Les contributions principales à l'étude des effets du progrès technique sur l'évolution des parts relatives du revenu national. *Rev. Econ.*, Nov. 1961, pp. 918-55.
- New light on patterns of output growth. *Surv. Curr. Bus.*, Sept. 1961, pp. 13-17.

Economic History; Economic Development; National Economies

- ALBERONI, F. Alcuni aspetti socio-culturali dello sviluppo economico italiano. *Studi Econ.*, May-Aug. 1961, pp. 333-48.
- BELLONE, G. Le banche di sviluppo nei Paesi in via di costruzione economica. (With English summary.) *Pol. d. Scambi*, July-Aug. 1961, pp. 5-18.
- BOR, M. AND NOTKIN, A. Methodological problems of the balance of the national economy. *Prob. Econ.*, Sept. 1961, pp. 11-18.
- CAVALIERI, D. La scelta degli investimenti nei programmi di sviluppo. *Riv. di Pol. Econ.*, Nov. 1961, pp. 2017-32.
- CHANDAVARKAR, A. G. The economic development of Libya. *Indian Econ. Jour.*, July 1961, pp. 69-74.
- CHATTERJEE, P. Some reflections on the external factors in labour productivity in India. *Asian Econ. Rev.*, Aug. 1961, pp. 371-87.
- COURTHÉOUX, J.-P. Sur la "socialisation" du progrès technique. *Rev. Econ.*, Nov. 1961, pp. 905-17.
- DEL PUNTA, V. Sur une application particulière de la programmation linéaire au problème de la programmation régionale. *Econ. Appliquée*, Jan.-Mar. 1961, pp. 85-102.
- DI NARDI, G. Expériences de la "Cassa per il Mezzogiorno." *Écon. Appliquée*, Jan.-Mar. 1961, pp. 123-54.
- , Osservazioni sui criteri di scelta degli investimenti. (With English summary.) *Risparmio*, Sept. 1961, pp. 1657-72.
- ECKAUS, R. S. The North-South differential in Italian economic development. *Jour. Econ. Hist.*, Sept. 1961, pp. 285-317.
- EDDISON, J. C. Industrial location and physical planning in Pakistan. *Pakistan Develop. Rev.*, Summer 1961, pp. 1-21.
- FERRARI AGGRADI, M. One hundred years of Italian economy. *Rev. Econ. Conditions in Italy*, July 1961, pp. 287-309.
- FRISCH, R. Economic planning and the growth problem of small countries. (With discussion.) *Statsøkonomisk Tids.*, Sept. 1961, pp. 115-38.

- Zum Problem des Umfangs und der Verteilung entwicklungsbedingter Kapitaltransfers. *Jahrb. f. Sozialwissensch.*, 1961, 12 (2), pp. 199-214.
- GRUEN, F. H. Agriculture and technical change. *Jour. Farm Econ.*, Nov. 1961, pp. 838-58.
- GUGLIELMI, G. Questioni di teoria e di metodo nello sviluppo economico. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Sept. 1961, pp. 876-85.
- HALL, A. R. The Australian economy, August 1961. *Econ. Record*, Sept. 1961, pp. 257-72.
- HOU, C. M. External trade, foreign investment, and domestic development: the Chinese experience, 1840-1937. *Econ. Develop. and Cult. Change*, Oct. 1961, pp. 21-41.
- HOUGHTON, D. H. Land reform in the Bantu areas and its effect upon urban labour. *So. Afr. Jour. Econ.*, Sept. 1961, pp. 165-75.
- HOYT, E. E. New diplomacy for underdeveloped areas. *Quart. Rev. Econ. and Bus.*, Aug. 1961, pp. 17-27.
- KALDOR, N. Características del desarrollo económico. *Rev. de Econ. Pol. (Madrid)*, May-Aug. 1961, pp. 574-631.
- KEMPF-MERCADO, R. Algunas consideraciones sobre el desarrollo económico de Venezuela. *El Trimestre Econ.*, Oct.-Dec. 1961, pp. 595-607.
- KIISKINEN, A. Regional economic growth in Finland, 1880-1952. *Scan. Econ. Hist. Rev.*, 1961, 9 (1), pp. 83-104.
- KLEIN, L. R. A model of Japanese economic growth, 1888-1937. *Econometrica*, July 1961, pp. 277-92.
- KÖLLNER, L. Probleme der Inflation in Entwicklungsländern. *Schmollers Jahrb.*, 1961, 81 (5), pp. 53-61.
- KOO, A. Y. C. A short-run measure of relative economic contribution of direct foreign investment. *Rev. Econ. Stat.*, Aug. 1961, pp. 269-76.
- KUNKEL, J. H. Economic autonomy and social change in Mexican villages. *Econ. Develop. and Cult. Change*, Oct. 1961, pp. 51-63.
- LAMBERG, R. F. Utviklingstrekk i Østblokkens økonomi i 1960. *Øst-Økon.*, 1961, 3-4, pp. 26-33.
- LANDAUER, C. Il progresso tecnologico vale ancora la pena? (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Sept. 1961, pp. 849-58.
- LAZZARINI, B. L'aumento ed il miglioramento dei consumi negli obiettivi del Piano Settennale Sovietico. (With English summary.) *Pol. d. Scambi*, July-Aug. 1961, pp. 19-30.
- LEON, P. Nota sull'utilità del reddito e lo sviluppo economico. *Studi Econ.*, May-Aug. 1961, pp. 274-96.
- MACESICH, G. Interest rates on the periphery and in the center of economic development. *So. Econ. Jour.*, Oct. 1961, pp. 138-47.
- MAH, F. H. The financing of public investment in Communist China. *Jour. Asian Stud.*, Nov. 1961, pp. 33-48.
- MARCHAL, A. Progrès technique et concurrence dans la Communauté Economique Européenne. *Rev. Econ.*, Nov. 1961, pp. 849-75.
- MARÉCHAL, E. AND MORISSENS, L. La politique économique belge depuis 1958. *Cahiers Econ. de Bruxelles*, July 1961, pp. 317-72.
- MARTNER, G. La técnica de la programación presupuestaria. *El Trimestre Econ.*, Oct.-Dec. 1961, pp. 686-734.
- MASERA, F. Punti di contatto fra l'economia giapponese e quella italiana. *Studi Econ.*, May-Aug. 1961, pp. 257-73.
- MEADE, J. E. Mauritius: a case study in Malthusian economics. *Econ. Jour.*, Sept. 1961, pp. 521-34.
- MIKESELL, R. F. El financiamiento externo del desarrollo económico en Latinoamérica. *Política (Venezuela)*, Feb.-Mar. 1961, pp. 18-41.
- MILONE, F. Regional structure of Italian economy, VI. *Rev. Econ. Conditions in Italy*, July 1961, pp. 317-41.

- MISKIMIN, H. A. Price movements and specie debasement in France, 1295-1395. *Yale Econ. Essays*, Fall 1961, pp. 233-74.
- MODELSKI, G. Agraria and industria: two models of the international system. *World Pol.*, Oct. 1961, pp. 118-43.
- MORAYCIK, I. The Marxian model of growth and the "general plan" of Soviet economic development. *Kyklos*, 1961, 14 (4), pp. 548-74.
- NEALE, W. C. The future of India's balance of trade. *Indian Econ. Jour.*, July 1961, pp. 1-18.
- OGRAM, E. W., JR. Canada's post-war balance of payments adjustments—a different view. *Rev. Econ. Stat.*, Aug. 1961, pp. 283-86.
- PANIKAR, P. G. K. Rural savings in India. *Econ. Develop. and Cult. Change*, Oct. 1961, pp. 64-85.
- PENOUIL, M. Nota su alcuni aspetti teorici della politica di sviluppo territoriale. II. *Studi Econ.*, May-Aug. 1961, pp. 236-56.
- PORTER, R. C. Income velocity and Pakistan's Second Plan. *Pakistan Develop. Rev.*, Summer 1961, pp. 22-51.
- POSTHUMA, S. A proposal for safeguarding steady development. *Econ. Internaz.*, Aug. 1961, pp. 441-80.
- RAJAMANI, A. N. Land reforms and policy against Third Five Year Plan. *Asian Econ. Rev.*, Aug. 1961, pp. 417-35.
- RAMAKRISHNA, K. T. Public aid to small-scale industries. *Asian Econ. Rev.*, Aug. 1961, pp. 436-50.
- ROSSI, L. Qualche considerazione sulle aree sottosviluppate. Problemi di sviluppo e co-operazione internazionale. *Studi Econ.*, May-Aug. 1961, pp. 217-35.
- SUPPLE, B. E. Economic history and economic underdevelopment. *Can. Jour. Econ. Pol. Sci.*, Nov. 1961, pp. 460-78.
- VINCENT, L.-A. Progrès technique et progrès économique. *Rev. Econ.*, Nov. 1961, pp. 876-904.
- VOLTES, P. Aportación a la historia de las operaciones de los Fugger en España durante el siglo XVII. *Moneda y Crédito*, Mar. 1961, pp. 13-40.
- WALLACE, W. H. Merrimack Valley manufacturing: past and present. *Econ. Geog.*, Oct. 1961, pp. 283-308.
- WATANABE, T. A test of the constancy of input-output coefficients among countries. *Internat. Econ. Rev.*, Sept. 1961, pp. 340-50.
- WESSEL, T. Arbeidsproduktiviteten og reallønn under den sovjetiske 7-årsplan. *Øst-Økon.*, 1961, 3-4, pp. 12-17.
- YODER, A. Communist China's economic growth in perspective. *Am. Jour. Econ. Soc.*, July 1961, pp. 377-90.
- The development of the economy during the first half of 1961. *Bank of Israel Bull.*, Nov. 1961, pp. 3-53.
- Employment objectives in economic development. *Internat. Lab. Rev.*, Nov. 1961, pp. 394-411.
- La France économique en 1960. Ten articles by L. Buquet, R. Marbot, P. Maillet and others. *Rev. d'Econ. Pol.*, July-Oct. 1961, pp. 409-724.

Statistical Methods; Econometrics; Social Accounting

- ADELMAN, I. AND GRILICHES, Z. On an index of quality change. *Jour. Am. Stat. Assoc.*, Sept. 1961, pp. 535-48.
- AMES, E. AND REITER, S. Distributions of correlation coefficients in economic time series. *Jour. Am. Stat. Assoc.*, Sept. 1961, pp. 637-56.

- BAUCHET, P. La comptabilité économique régionale et son usage. *Écon. Appliquée*, Jan.-Mar. 1961, pp. 51-84.
- BROWN, M. Ex ante and ex post data inventory investment. *Jour. Am. Stat. Assoc.*, Sept. 1961, pp. 518-34.
- DE JANOSI, P. E. The statistical discrepancy in the national accounts revisited. *Econometrica*, July 1961, pp. 427-29.
- DE TORRES MARTÍNEZ, M. Problemas que se plantean al establecer y utilizar la contabilidad regional de Input-Output. *Rev. de Econ. Pol. (Madrid)*, May-Aug. 1961, pp. 418-41.
- FISHER, F. M. On the cost of approximate specification in simultaneous equation estimation. *Econometrica*, Apr. 1961, pp. 139-70.
- GRUNFELD, Y. The interpretation of cross section estimates in a dynamic model. ("In memoriam Yehuda Grunfeld," by D. Patinkin.) *Econometrica*, July 1961, pp. 397-405.
- GUITION, H. Indices e indicadores. *Rev. de Econ. y Estad.*, 1960, 4 (1, 2, 3, 4), pp. 9-24.
- HARTLEY, H. O. Nonlinear programming by the simplex method. *Econometrica*, Apr. 1961, pp. 223-37.
- HIRSHLEIFER, J. The Bayesian approach to statistical decision: an exposition. *Jour. Bus. Univ. Chicago*, Oct. 1961, pp. 471-89.
- HOGG, R. V. On the resolution of statistical hypotheses. *Jour. Am. Stat. Assoc.*, Dec. 1961, pp. 978-89.
- KISH, L. Efficient allocation of a multi-purpose sample. *Econometrica*, July 1961, pp. 363-85.
- KLOEK, T. Note on convenient matrix notations in multivariate statistical analysis and in the theory of linear aggregation. *Internat. Econ. Rev.*, Sept. 1961, pp. 351-60.
- KUDROV, V. Anti-scientific methods employed by bourgeois economists to compare the national incomes of the USSR and the US. *Prob. Econ.*, Aug. 1961, pp. 37-42.
- LINNAMO, J. Rahoitustilinpito ja rahoitusmarkkinoiden tilastointi. (Financial accounting and financial statistics.) *Kansantaloudellinen Aikakauskirja*, 1961, 3, pp. 167-92.
- LIVITAN, N. Errors in variables and Engel curve analysis. *Econometrica*, July 1961, pp. 336-62.
- MANDEL, J. Non-additivity in two-way analysis of variance. *Jour. Am. Stat. Assoc.*, Dec. 1961, pp. 878-88.
- MORGENSTERN, O. A new look at economic time series analysis. *L'industria*, 1961, 3, pp. 325-36.
- SARGAN, J. D. The maximum likelihood estimation of economic relationships with autoregressive residuals. *Econometrica*, July 1961, pp. 414-26.
- SIMON, H. A. AND ANDO, A. Aggregation of variables in dynamic systems. *Econometrica*, Apr. 1961, pp. 111-38.
- THEIL, H. AND NAGAR, A. L. Testing the independence of regression disturbances. *Jour. Am. Stat. Assoc.*, Dec. 1961, pp. 793-806.
- VINCENT, L. A. The main formulae for productivity measurement in a national economy or sector. *Prod. Meas. Rev.*, May 1961, pp. 5-17.
- WAUGH, F. V. The place of least squares in econometrics. *Econometrica*, July 1961, pp. 386-96.

Economic Systems; Planning and Reform; Cooperation

- DOW, J. C. R. Problems of economic planning. *Westminster Bank Rev.*, Nov. 1961, pp. 14-25.
- LASKI, K. La funzione degli investimenti nel reddito nazionale di una economia pianificata. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Aug. 1961, pp. 725-38.
- STANOVNIK, J. Planning through the market: the Yugoslav experience. *For. Affairs*, Jan. 1962, pp. 252-63.

- VARGA, S. Wirtschafts- und Marktforschung in Ost und West (II). *Schmollers Jahrb.*, 1961. 81 (4), pp. 67-90.

Business Fluctuations

- COPPOCK, D. The causes of the Great Depression, 1873-96. *Man. School Econ. Soc. Stud.*, Sept. 1961, pp. 205-32.
- SCHMIDT, G. La lucha contra las crisis económicas. *Rev. de Econ. Pol. (Madrid)*, Sept.-Dec. 1961, pp. 743-69.
- WEIDENHAMMER, R. M. Insuccessi passati e metodi nuovi nelle previsioni e proiezioni economiche. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Oct. 1961, pp. 925-38.

Money, Credit and Banking; Monetary Policy Consumer Finance; Mortgage Credit

- AMATAYAKUL, R. AND PANDIT, S. A. Financial institutions in Thailand. *Internat. Mon. Fund Staff Papers*, Dec. 1961, pp. 464-89.
- AUTEN, J. H. Monetary policy and the forward exchange market. *Jour. Finance*, Dec. 1961, pp. 546-58.
- BIERI, H. G. Geld und Kredit in einer wachsenden Wirtschaft. *Theoretische Betrachtungen. Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Sept. 1961, pp. 265-74.
- CRAWCOUR, S. The development of a credit system in seventeenth-century Japan. *Jour. Econ. Hist.*, Sept. 1961, pp. 342-60.
- CULBERTSON, J. M. The lag in effect of monetary policy: reply. *Jour. Pol. Econ.*, Oct. 1961, pp. 467-77.
- . The use of monetary policy. *So. Econ. Jour.*, Oct. 1961, pp. 130-37.
- DELL'AMORE, G. Il processo di costituzione della banca centrale in Italia. *Risparmio*, July 1961, pp. 1269-38.
- FRIEDMAN, M. The lag in effect of monetary policy. *Jour. Pol. Econ.*, Oct. 1961, pp. 447-66.
- HENDERSON, R. F. Monetary policy in Australia 1960-61. *Econ. Record*, Sept. 1961, pp. 294-307.
- HODGMAN, D. R. The deposit relationship and commercial bank investment behavior. *Rev. Econ. Stat.*, Aug. 1961, pp. 257-68.
- HOLBIK, K. E' l'inflazione un "perpetuum mobile" internazionale? (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Aug. 1961, pp. 701-16.
- KNESCHAUREK, F. Geld und Kredit in einer wachsenden Wirtschaft. *Die wirtschaftspolitischen Probleme. Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Sept. 1961, pp. 275-88.
- L'HUILLIER, J. La monnaie, le crédit et la croissance économique. Le cas de la Suisse. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Sept. 1961, pp. 289-308.
- LUNDBERG, E. The possibilities of monetary policy. *Skandinav. Bank. Quart. Rev.*, Oct. 1961, pp. 99-108.
- MÜLHAUPT, L. Ansatzpunkte für eine Theorie der Kreditbank. *Jahrb. f. Sozialwissensch.*, 1961, 12 (2), pp. 132-43.
- MYERS, M. G. The control of consumer credit in Australia. *Jour. Finance*, Sept. 1961, pp. 409-22.
- OLAKANPO, J. O. W. Monetary management in dependent economies. *Economica*, Nov. 1961, pp. 395-408.
- PORTER, R. C. A model of bank portfolio selection. *Yale Econ. Essays*, Fall 1961, pp. 323-60.
- SELDEN, R. T. The postwar rise in the velocity of money: a sectoral analysis. *Jour. Finance*, Dec. 1961, pp. 483-545.

- SOLÍS M., L. Controles selectivos del crédito: un nuevo enfoque. *El Trimestre Econ.*, Oct.-Dec. 1961, pp. 559-68.
- THANOS, C. A. Open-market operations and the portfolio policies of the commercial banks. *Econ. Jour.*, Sept. 1961, pp. 566-71.
- TIMBERLAKE, R. H., Jr. The specie standard and central banking in the United States before 1860. *Jour. Econ. Hist.*, Sept. 1961, pp. 318-41.
- VENTRIGLIA, F. Les Instituts régionaux de crédit. *Écon. Appliquée*, Jan.-Mar. 1961, pp. 103-22.
- WICKER, E. R. The behavior of the consumer money supply since World War II. *Jour. Pol. Econ.*, Oct. 1961, pp. 437-46.
- The differential effects of tight money: Comment by D. Carson: Reply by G. L. Bach and C. J. Huizenga. *Am. Econ. Rev.*, Dec. 1961, pp. 1039-43.
- La evolución de las reservas monetarias de los países miembros. *Rev. de Econ. Pol.* (Madrid), May-Aug. 1961, pp. 513-53.
- Liquidity and public policy. *Fed. Res. Bull.*, Oct. 1961, pp. 1161-77.
- Survey of finance companies, mid-1961. *Fed. Res. Bull.*, Oct. 1961, pp. 1140-60.

Public Finance; Fiscal Policy

- DOSSEY, D. Tax incidence and growth. *Econ. Jour.*, Sept. 1961, pp. 572-91.
- FORTE, F. Il problema della scelta del tipo di imposizione sulle vendite: Imposta monofase o a poche fasi. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Sept. 1961, pp. 814-48.
- FRANK, H. J. Federal revenues from taxing municipals. *Jour. Finance*, Sept. 1961, pp. 387-408.
- FUJITA, S. Political ceiling on income taxation. *Pub. Fin./Fin. Publiques*, 1961, 16 (2), pp. 183-98.
- HALLER, H. Die Bedeutung des Äquivalenzprinzips für die öffentliche Finanzwirtschaft. *Finanzarchiv*, Sept. 1961, pp. 248-60.
- KHAN, A. R. Financing the Second Five Year Plan. *Pakistan Develop. Rev.*, Summer 1961, pp. 52-63.
- LIZZUL, R. Ammortamenti accelerati e riduzioni delle aliquote d'imposta. *Riv. di Pol. Econ.*, Oct. 1961, pp. 1797-1808.
- PHELPS, C. D. The impact of tightening credit on municipal capital expenditures in the United States. *Yale Econ. Essays*, Fall 1961, pp. 275-322.
- SCOTTO, A. Verso il centenario della finanza pubblica italiana. *Giorn. d. Econ.*, May-June 1961, pp. 275-346.
- SURREY, S. S. AND OLDMAN, O. Report of a preliminary survey of the tax system of Argentina. *Pub. Fin./Fin. Publiques*, 1961, 16 (2), pp. 155-82.
- TIMM, H. Das Gesetz der wachsenden Staatsausgaben. *Finanzarchiv*, Sept. 1961, pp. 201-47.
- WILLIAMS, A. Fiscal policy and interregional resource allocation. *Pub. Fin./Fin. Publiques*, 1961, 16 (2), pp. 133-51.

International Economics

- ALTMAN, O. L. Foreign markets for dollars, sterling, and other currencies. *Internat. Mon. Fund Staff Papers*, Dec. 1961, pp. 313-52.
- BACHMANN, H. *Weltwirtschaft. Aussenwirtschaft*, Sept.-Dec. 1961, pp. 5-24.
- BALDWIN, D. A. The International Development Association: theory and practice. *Econ. Develop. and Cult. Change*, Oct. 1961, pp. 86-96.
- BAUER, G. F. Bilan et perspectives de l'intégration économique européenne. *Aussenwirtschaft*, Sept.-Dec. 1961, pp. 67-83.

- BINSWANGER, H. C. Die Auswirkungen einer eventuellen Zollharmonisierung auf das schweizerische Kostenniveau. *Aussenwirtschaft*, Sept.-Dec. 1961, pp. 127-155.
- BOSSHARDT, A. Aussenhandel und Aussenwirtschaftspolitik der Schweiz. *Aussenwirtschaft*, Sept.-Dec. 1961, pp. 25-48.
- CHAKRAVARTY, S. A structural study of international capital movement. *Econ. Internaz.*, Aug. 1961, pp. 377-404.
- CUTILLI, B. Liquidità internazionale e proposte di riforma del Fondo Monetario Internazionale. *Econ. Internaz.*, Aug. 1961, pp. 405-31.
- DEL PUNTA, V. L'attuale stadio di evoluzione della teoria pura del commercio internazionale. *Riv. di Pol. Econ.*, Nov. 1961, pp. 1973-2016.
- DEVONS, E. Understanding international trade. *Economica*, Nov. 1961, pp. 351-59.
- DORRANCE, G. S. AND BREHMER, E. Controls on capital inflow: recent experience of Germany and Switzerland. *Internat. Mon. Fund Staff Papers*, Dec. 1961, pp. 427-38.
- DUBINSKII, I. Some features of the development of the world socialist market. *Prob. Econ.*, Sept. 1961, pp. 56-62.
- EINZIG, P. Statics and dynamics of the Euro-dollar market. *Econ. Jour.*, Sept. 1961, pp. 592-95.
- FEDER, E. Some reflections on Latin America's "Common Market." *Am. Jour. Econ. Soc.*, July 1961, pp. 433-42.
- FLEMING, J. M. International liquidity: ends and means. *Internat. Mon. Fund Staff Papers*, Dec. 1961, pp. 439-63.
- GEMMILL, R. F. Interest rates and foreign dollar balances. *Jour. Finance*, Sept. 1961, pp. 363-76.
- GROTEWOLD, A. Some aspects of the geography of international trade. *Econ. Geog.*, Oct. 1961, pp. 309-19.
- GRUNWALD, K. From Alfred Marshall to George Marshall—the genesis of the foreign aid doctrine. *Kyklos*, 1961, 14 (4), pp. 589-95.
- HABERLER, G. Amerika und die europäische Integration. *Aussenwirtschaft*, Sept.-Dec. 1961, pp. 49-66.
- HANSEN, B. Kursbildningen på valutamarknaderna. (The determination of exchange rates in the foreign exchange markets.) *Ekon. Tids.*, Sept. 1961, pp. 173-200.
- KANESATHASAN, S. Government imports and import taxes in monetary analysis of income and imports. *Internat. Mon. Fund Staff Papers*, Dec. 1961, pp. 412-26.
- KAHN-FREUND, O. Social policy and the common market. *Pol. Quart.*, Oct.-Dec. 1961, pp. 341-52.
- KRAJGER, S. Jugoslavias utenrikshandel. *Øst-Økon.*, 1961, 3-4, pp. 18-25.
- LAING, N. F. Factor price equalisation in international trade and returns to scale. *Econ. Record*, Sept. 1961, pp. 339-51.
- LAMFALUSSY, A. Europe's progress: due to Common Market? *Lloyds Bank Rev.*, Oct. 1961, pp. 1-16.
- MÜLLER, E. Atlantische oder europäische Wirtschaftsgemeinschaft? *Zeitschr. f. die ges. Staatswiss.*, Oct. 1961, pp. 494-520.
- MUNDELL, R. Flexible exchange rates and employment policy. *Can. Jour. Econ. Pol. Sci.*, Nov. 1961, pp. 509-17.
- NARVEKAR, P. R. The cycle in Japan's balance of payments, 1955-58. *Internat. Mon. Fund Staff Papers*, Dec. 1961, pp. 380-411.
- NYDEGGER, A. Die Auswirkungen einer eventuellen Zollharmonisierung auf die schweizerische Handelspolitik. *Aussenwirtschaft*, Sept.-Dec. 1961, pp. 105-26.
- OLSEN, E. Nye redskaber i analysen af udenrigshandel og indkomstfordeling. *Nationaløk. Tids.*, 1961, 99 (1-2), pp. 30-39.
- PELLEMANS, P. Organisation et technique du commerce extérieur des pays socialistes. *Vie Econ. et Soc.*, Nov. 1961, pp. 311-28.

- PREBISCH, R. La respuesta de América Latina a una nueva política de cooperación económica internacional. *El Trimestre Econ.*, Oct.-Dec. 1961, pp. 674-85.
- STOKES, C. J. El mercado común latinoamericano—una defensa clásica. *Rev. de Econ. y Estad.*, 1960, 4 (1, 2, 3, 4), pp. 55-74.
- THUNHOLM, L. E. De internationella kapitalrörelserna. *Nationaløk. Tids.*, 1961, 99 (1-2), pp. 1-18.
- TORRES MANZO, C. Comentarios alrededor de dos preguntas sobre comercio internacional. *Investigación Econ.*, 1961, 21 (3), pp. 475-95.
- TSIANG, S. C. The role of money in trade-balance stability: synthesis of the elasticity and absorption approaches. *Am. Econ. Rev.*, Dec. 1961, pp. 912-36.
- WEITNAUER, A. Die schweizerische Handelspolitik, Europa und die Welt. *Aussenwirtschaft*, Sept.-Dec. 1961, pp. 89-104.
- WOLD, K. G. Mellomfolkelig økonomisk integrasjon og pengepolitikken. *Statsøkonomisk Tids.*, Sept. 1961, pp. 73-90.
- The Common Market. *Irish Banking Rev.*, Sept. 1961, pp. 3-11.

Business Finance; Investment and Security Markets; Insurance

- BIANCHI, T. L'autofinanziamento. (With English summary.) *Risparmio*, Sept. 1961, pp. 1685-1764.
- FRAINE, H. G. AND MILLS, R. H. Effect of defaults and credit deterioration on yields of corporate bonds. *Jour. Finance*, Sept. 1961, pp. 423-34.
- HOLT, C. C. AND SHEELTON, J. P. The implications of the capital gains tax for investment decisions. *Jour. Finance*, Dec. 1961, pp. 559-80.
- HUNT, P. A proposal for precise definitions of "trading on the equity" and "leverage." *Jour. Finance*, Sept. 1961, pp. 377-86.
- MARTÍNEZ DE IBARRETA, J. El problema de las ampliaciones de capital y su repercusión en las inversiones bursátiles. *Rev. de Econ. Pol. (Madrid)*, Sept.-Dec. 1961, pp. 671-98.
- MILLER, M. H. AND MODIGLIANI, F. Dividend policy, growth, and the valuation of shares. *Jour. Bus. Univ. Chicago*, Oct. 1961, pp. 411-33.
- SPRENKLE, C. M. Warrant prices as indicators of expectations and preferences. *Yale Econ. Essays*, Fall 1961, pp. 179-232.
- Capital markets in 1961. *Fed. Res. Bull.*, Sept. 1961, pp. 1029-35.

Business Organization; Managerial Economics; Marketing; Accounting

- BIEDERMANN, G. The cost function for crude oil production. *Man. School Econ. Soc. Stud.*, Sept. 1961, pp. 249-66.
- BODENHORN, D. An economist looks at industrial accounting and depreciation. *Accounting Rev.*, Oct. 1961, pp. 583-88.
- BUDIN, M. AND PAUL, S. The utilization of Indian industrial capacity (1949-1959). *Indian Econ. Jour.*, July 1961, pp. 19-47.
- CASTELLANO, C. La politica del "prezzo imposto" nelle aziende industriali. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Nov. 1961, pp. 1031-50.
- DAVIDSON, S. AND DRAKE, D. F. Capital Budgeting and the "best" tax depreciation method. *Jour. Bus. Univ. Chicago*, Oct. 1961, pp. 442-52.
- FLANDERS, D. P. Accountancy, systematized learning, and economics. *Accounting Rev.*, Oct. 1961, pp. 564-76.
- POLLACK, G. A. The capital budgeting controversy: present value vs. discounted cash flow method. *N.A.A. Bull.*, Nov. 1961, pp. 5-20.
- PRESTON, L. E. AND BELL, E. J. The statistical analysis of industry structure: an application to food industries. *Jour. Am. Stat. Assoc.*, Dec. 1961, pp. 925-32.

Industrial Organization; Government and Business; Industry Studies

- ABRAHAM, C. L'étude économique des investissements routiers. *Rev. Econ.*, Sept. 1961, pp. 755-80.
- BAYER, H. Dynamik der organisierten Marktwirtschaft. *Schmollers Jahrb.*, 1961, 81 (4), pp. 37-54.
- BELLOT, J. Le marché des eaux minérales et des limonades. *Annales de Sci. Écon. Appliquées*, Oct. 1961, pp. 391-432.
- BRANDT, K. Die Konfliktsituation im Kartell. *Zeitschr. f. die ges. Staatswiss.*, Oct. 1961, pp. 385-423.
- COOK, P. L. Orderly marketing or competition? (The blanket manufacturers' agreement.) *Econ. Jour.*, Sept. 1961, pp. 497-511.
- COLLINS, N. R. AND PRESTON, L. E. The size structure of the largest industrial firms, 1909-1958. *Am. Econ. Rev.*, Dec. 1961, pp. 986-1011.
- CORNA PELLEGRINI, G. Sulla legislazione antimonopolistica in Italia. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Sept. 1961, pp. 859-75.
- CUTBERT, N. AND BLACK, W. Restrictive practices in the food trades. II. *Jour. Indus. Econ.*, Nov. 1961, pp. 51-77.
- DESCHENAUX, H. La nouvelle jurisprudence du Tribunal fédéral en matière de boycott et l'avant-projet de loi sur cartels. *Wirtschaft und Recht*, 1961, 13 (3), pp. 137-64.
- EASTMAN, H. C. AND STYKOLT, S. Le fonctionnement de deux oligopoles protégés au Canada. *Écon. Appliquée*, Jan.-Mar. 1961, pp. 27-50.
- GLASSBOROW, D. W. Parking charges and parking meters. *Westminster Bank Rev.*, Nov. 1961, pp. 26-34.
- HANDLER, M. Recent antitrust developments. *Yale Law Jour.*, Nov. 1961, pp. 75-106.
- HEUSS, E. Das Kartell. Ein Beitrag zur Kartelltheorie. *Jahrb. f. Sozialwissensch.*, 1961, 12 (2), pp. 144-62.
- HOPFMANN, E. Wettbewerbspolitik und Exportkartelle. *Jahrb. f. Nationalök. und Stat.*, Sept. 1961, pp. 343-82.
- LANDRY, A. Le marché international et la situation de l'industrie automobile. *Rev. Econ.*, Sept. 1961, pp. 689-754.
- LEVIN, H. J. Regulatory efficiency, reform and the FCC. *Georgetown Law Jour.*, Fall 1961, pp. 1-45.
- MEDINA URBIZU, E. Aspectos de los transportes nacionales. *Investigación Econ.*, 1961, 21 (3), pp. 497-516.
- PHILLIPS, C. F., Jr. Workable competition in the synthetic rubber industry. *So. Econ. Jour.*, Oct. 1961, pp. 154-62.
- POSTEL, C. Quelques aspects de la croissance du transport aérien, 1950-60. *Rev. Econ.*, Sept. 1961, pp. 781-817.
- REYNOLDS, D. J. The economics of rural motorways. *Jour. Indus. Econ.*, Nov. 1961, pp. 10-20.
- ROSENBLUTH, G. AND THORBURN, H. G. Canadian anti-combines administration, 1952-1960. *Can. Jour. Econ. Pol. Sci.*, Nov. 1961, pp. 498-508.
- SASSI, S. Intorno al problema finanziario delle aziende di navigazione. (With English summary.) *Risparmio*, Sept. 1961, pp. 1673-84.
- Symposium on administrative regulation. *Law and Contemp. Problems*, Spring 1961, pp. 179-346.

Land Economics; Agricultural Economics; Economic Geography; Housing

- BARBERO, G. Realizaciones y problemas de la Reforma Agraria en Bolivia. *El Trimestre Econ.*, Oct.-Dec. 1961, pp. 612-50.

- EDWARDS, D. T. An economic view of Jamaican agriculture. *Soc. Econ. Stud.*, Sept. 1961, pp. 306-39.
- FERNÁNDEZ Y FERNÁNDEZ, R. Reforma agraria en el Ecuador. *El Trimestre Econ.*, Oct.-Dec. 1961, pp. 569-94.
- GERARD, A. F. AND GRAYSON, L. E. Question of a national fuels policy. *Quart. Rev. Econ. and Bus.*, Aug. 1961, pp. 7-16.
- MAISIN, J. Industrie sucrière. *Annales de Sci. Écon. Appliquées*, Oct. 1961, pp. 435-461.
- MENDOZA BERRUETO, E. El desarrollo económico y el sector agrícola. *Investigación Econ.*, 1961, 21 (3), pp. 577-94.
- MILHAU, J. L'organisation des marchés agricoles en France. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Sept. 1961, pp. 801-13.
- MILLER, M. The scope and content of resource policy in relation to economic development. *Land Econ.*, Nov. 1961, pp. 291-310.
- NEWTH, J. A. Soviet agriculture: the private sector 1950-1959. *Soviet Stud.*, Oct. 1961, pp. 160-71.
- SAAVEDRA MOTA, M. El tabaco. Principales aspectos. *Investigación Econ.*, 1961, 21 (3), pp. 517-57.
- SALIN, E. Energiepolitik europäischer Industriestaaten oder europäische Energiepolitik? *Kyklos*, 1961, 14 (4), pp. 451-81.
- STEWART, C. T., Jr. Land and income distribution in peasant countries. *Land Econ.*, Nov. 1961, pp. 337-46.

Labor Economics

- ÅBERG, Y. Arbetstidens bestämning på marknaden. (The determination of hours of work in the labour market.) *Ekon. Tids.*, Sept. 1961, pp. 209-18.
- BARBASH, J. Union response to the "hard line." *Indus. Rel.*, Oct. 1961, pp. 25-38.
- BHATIA, R. J. AND BOUTER, A. C. A system of governmental wage control: experience of the Netherlands, 1945-60. *Internat. Mon. Fund Staff Papers*, Dec. 1961, pp. 353-79.
- BRAFF, A. J. AND MILLER, R. F. Wage-price policies under public pressure. *So. Econ. Jour.*, Oct. 1961, pp. 163-73.
- CUMPER, G. E. Labour and development in the West Indies: I. *Soc. Econ. Stud.*, Sept. 1961, pp. 278-305.
- DERBER, M., CHALMERS, W. E. AND EDELMAN, M. T. Union participation in plant decision-making. *Indus. Lab. Rel. Rev.*, Oct. 1961, pp. 83-101.
- DOUTY, H. M. Sources of occupational wage and salary rate dispersion within labor markets. *Indus. Lab. Rel. Rev.*, Oct. 1961, pp. 67-74.
- DUNCAN, O. D. Occupational components of educational differences in income. *Jour. Am. Stat. Assoc.*, Dec. 1961, pp. 783-92.
- FISK, E. K. The mobility of rural labour and the settlement of new land in underdeveloped countries. *Jour. Farm Econ.*, Nov. 1961, pp. 761-78.
- GEORGE, M. V. Labour force in Kerala 1951-66. *Asian Econ. Rev.*, Aug. 1961, pp. 388-98.
- HANDSAKER, M. AND M. L. Arbitration in Great Britain. *Indus. Rel.*, Oct. 1961, pp. 117-36.
- HANSEN, W. L. The "shortage" of engineers. *Rev. Econ. Stat.*, Aug. 1961, pp. 251-56.
- HERRNSTADT, I. L. AND SOFFER, B. Recent labor disputes over "restrictive" practices and "inflationary" wage increases. *Jour. Bus. Univ. Chicago*, Oct. 1961, pp. 453-70.
- HODGES, D. C. Rise and fall of militant trade unionism. *Am. Jour. Econ. Soc.*, Oct. 1961, pp. 483-96.
- HOTANI, R. AND HAYASHI, T. The evolution of wage structure in Japan. *Indus. Lab. Rel. Rev.*, Oct. 1961, pp. 52-66.
- KAPUSTIN, E. Some problems of further improving the organization of the wage system. *Prob. Econ.*, Sept. 1961, pp. 40-48.

- KATZ, A. The labor aristocracy in the United States of America. *Prob. Econ.*, Aug. 1961, pp. 53-62.
- KATZEN, L. B. The case for minimum wage legislation in South Africa. *So. Afr. Jour. Econ.*, Sept. 1961, pp. 195-212.
- KENADJIAN, B. Disguised unemployment in underdeveloped countries. *Zeitschr. f. Nationalökon.*, Sept. 1961, pp. 216-23.
- KILBRIDGE, M. D. Turnover, absence, and transfer rates as indicators of employee dissatisfaction with repetitive work. *Indus. Lab. Rel. Rev.*, Oct. 1961, pp. 21-32.
- LADHARI, N. Labour-management relations in Tunisia. *Internat. Lab. Rev.*, Sept. 1961, pp. 175-97.
- LARROWE, C. P. A meteor on the industrial relations horizon: the Foreman's Association of America. *Lab. Hist.*, Fall 1961, pp. 259-94.
- LERDON, F. Dix ans d'expérience de prévision de l'emploi. *Population*, July-Sept. 1961, pp. 427-46.
- LIPSET, S. M. Trade unions and social structure: I. *Indus. Rel.*, Oct. 1961, pp. 75-90.
- MAHER, J. E. The wage pattern in the United States, 1946-57. *Indus. Lab. Rel. Rev.*, Oct. 1961, pp. 3-20.
- . Wages: the pattern of wage movements in the United States since 1945—its meaning and significance. *Rev. Econ. Stat.*, Aug. 1961, pp. 277-82.
- NORTHRUP, H. R. Management's "new look" in labor relations. *Indus. Rel.*, Oct. 1961, pp. 9-24.
- PERUCCI, R. The significance of intra-occupational mobility. *Am. Soc. Rev.*, Dec. 1961, pp. 874-82.
- PIERSON, F. C. Recent employer alliances in perspective. *Indus. Rel.*, Oct. 1961, pp. 39-56.
- POMPER, G. Labor and Congress: the repeal of Taft-Hartley. *Lab. Hist.*, Fall 1961, pp. 323-43.
- ROONEY, J. F. Effects of imported Mexican farm labor in a California County. *Am. Jour. Econ. Soc.*, Oct. 1961, pp. 513-21.
- ROSS, A. M. The prospect for industrial conflict. *Indus. Rel.*, Oct. 1961, pp. 57-74.
- SCHIFFMAN, J. Multiple jobholders in December 1960. *Mo. Lab. Rev.*, Oct. 1961, pp. 1066-73.
- SEGAL, M. Unionism and wage movements. *So. Econ. Jour.*, Oct. 1961, pp. 174-81.
- SPRADLIN, T. R. Mexican farm labor importation program—review and reform. *George Wash. Law Rev.*, Oct. 1961, pp. 84-122.
- TAIRA, K. Japanese "enterprise unionism" and interfirm wage structure. *Indus. Lab. Rel. Rev.*, Oct. 1961, pp. 33-51.
- THOMPSON, L. A. Motives and practices of moonlighters. *Univ. Washington Bus. Rev.*, Oct. 1961, pp. 5-21.
- TROY, L. Labor representation on American railways. *Lab. Hist.*, Fall 1961, pp. 295-322.

Population; Welfare Programs; Consumer Economics

- BUNTING, R. L. A test of the theory of geographic mobility. *Indus. Lab. Rel. Rev.*, Oct. 1961, pp. 75-82.
- EASTERLIN, R. A. The American baby boom in historical perspective. *Am. Econ. Rev.*, Dec. 1961, pp. 869-911.
- ESENWEIN-ROTHER, I. Neuere Literatur zur theoretischen und politischen Bevölkerungswissenschaft. II. *Jahrb. f. Sozialwissensch.*, 1961, 12 (2), pp. 215-36.
- HICKS, U. K. La terminología del análisis impositivo. *Investigación Econ.*, 1961, 21 (3), pp. 559-75.
- MAHAJAN, V. S. The concept of optimum population. *Asian Econ. Rev.*, Aug. 1961, pp. 362-70.

- NOVACCO, N. Prévision pour l'année 1975 sur la population italienne selon la qualification professionnelle et l'instruction. *Population*, July-Sept. 1961, pp. 463-72.
- SHAFFER, H. G. Investment in human capital: comment. Reply by T. W. Schultz. *Am. Econ. Rev.*, Dec. 1961, pp. 1026-38.
- TAEUBER, K. E., HAENSZEL, W., AND SIRKEN, M. G. Residence histories and exposure residences for the United States population. *Jour. Am. Stat. Assoc.*, Dec. 1961, pp. 824-34.
- THOMLINSON, R. A model for migration analysis. *Jour. Am. Stat. Assoc.*, Sept. 1961, pp. 675-86.
- TREVOUX, F. Quelques aspects du développement de la dette viagère. (With English summary.) *Riv. Internaz. di Sci. Econ. e Com.*, Nov. 1961, pp. 1015-30.
- VON UNGERN-STERBERG, R. Ernährungshilfe und Bevölkerungsvermehrung in der Welt. *Schmollers Jahrb.*, 1961, 81 (4), pp. 55-65.
- Social security in Africa south of the Sahara. *Internat. Lab. Rev.*, Sept. 1961, pp. 144-74.

Related Disciplines

- BENDIX, R. The lower classes and the "democratic revolution." *Indus. Rel.*, Oct. 1961, pp. 91-116.
- THEIL, H. The Econometric Institute's first five years. *De Economist*, Sept.-Oct. 1961, pp. 603-34.

NOTES

EDITORIAL NOTE

It is with great satisfaction that I announce that the Executive Committee of the Association has appointed John G. Gurley to succeed me as managing editor of the *Review* on January 1, 1963. The journal will be in highly competent hands.

Also, during my temporary absence in the months of April-June of the current year, Professor Gurley has kindly consented to serve as acting managing editor; and Professor Lorie Tarshis will be associate editor.

BERNARD F. HALEY

Theodore W. Schultz, department of economics, University of Chicago, has been appointed chairman of the American Economic Association nominating committee. Suggestions for officers of the Association in 1963 should be sent to him as early as possible.

THE AMERICAN ECONOMY—A TELEVISION COURSE

Learning Resources Institute (LRI) is planning a television course for college credit in "The American Economy." The course will be presented during the 1962-63 academic year over CBS Television Network. A number of educational television stations also will carry the series. LRI hopes that educational institutions and school systems will develop plans for utilizing the course as part of their regular curricula and inservice training programs.

The course is sponsored by The National Task Force on Economic Education, the American Economic Association, and the Joint Council on Economic Education. The Task Force (G. L. Bach, chairman) will act as an advisory committee.

Further information about the course can be obtained from Anne P. Folger, National Coordinator, Learning Resources Institute, 680 Fifth Avenue, New York 19, New York.

THE CENTER FOR QUANTITATIVE STUDY OF ECONOMIC STRUCTURE AND GROWTH

A Center for Quantitative Study of Economic Structure and Growth has been established at Yale University under a grant from The Ford Foundation. Its purpose is to further comparative analysis of the structure and development of national economies.

The research program emphasizes the search for regularities in the process of growth and structural change by means of intercountry and intertemporal studies. To provide more reliable statistical tests of theoretical hypotheses, the Center is concerned with improving the techniques of economic measurement and with refinement of national data systems. The Center maintains a library of relevant statistical and economic documents published by national governments and international organizations. It also operates a training program for economists and statisticians employed in foreign government agencies with a view to strengthening national planning and statistical organizations over the long run.

The Center has been planned as a research resource for scholars anywhere in the world who are working on problems within its area of interest. A number of visiting scholars from other institutions will be in residence each year.

The officers of the Center are Lloyd G. Reynolds, director; Gustav Ranis, associate director; and Mariam Chamberlain, executive secretary. A fuller description of The Center's interests and activities is available on request.

CENTER FOR RESEARCH ON ECONOMIC DEVELOPMENT

A Center for Research on Economic Development (CRED) has been established at the University of Michigan for the study of economic development and national and international programs designed to accelerate such development in underdeveloped countries.

The Center's research is theoretically oriented and primarily directed to increasing scientific understanding of economic growth and development in the less developed countries. It is concerned with noneconomic as well as economic conditions and draws upon the data, concepts and methods of a variety of disciplines through the facilities of a university-wide organization. Instruction in the various disciplines and professions is given by the established department of the University and a doctoral program in development economics is offered in the department of economics. Samuel P. Hayes has been appointed director of the Center for a three-year term.

NATIONAL SCIENCE FOUNDATION PROGRAMS IN ECONOMICS

The National Science Foundation now includes in its fellowship and grant programs all of economics, econometrics, economic statistics, and economic and social geography, where previously only mathematical economics and econometrics were included. The following programs will be of interest to economists:

1. *Grants for Scientific Research*: Closing filing dates are February 1, May 1 and October 1, with notification of the Foundation's action approximately 3 months later.

2. *Postdoctoral Fellowships* (semi-annual awards): In support of scientists who have recently received a doctors' degree and who need or are qualified for additional advanced training. Stipend at an annual rate of \$4500 to \$5000 plus dependency allowance for periods from 6 months to 2 years. Application deadlines: early September and mid-December, awards in October and March.

3. *Senior Postdoctoral Fellowships* (annual awards): To senior scientists of demonstrated ability who have had the doctoral degree at least 5 years or who have had equivalent scientific training or research experience. Stipends are computed on fellow's income at time of application to a maximum of \$15,000 per annum, for periods from 3 months to 2 years. Application deadline: early October, awards in mid-December.

4. *Science Faculty Fellowships* (annual awards): Primarily for college teachers with a view towards enhancing their effectiveness as teachers. Applicants must have at least three years of college teaching experience, a baccalaureate degree, demonstrated ability and a special aptitude for teaching and advanced training. Stipends are computed on fellow's income at time of application to a maximum of \$15,000 per annum for periods of 3 months to 15 months. Application deadline: early October, awards in mid-December.

5. *Graduate (predoctoral) Fellowships* (annual awards): For students studying for doctor's degree. Applicants required to take examinations testing scientific aptitude and scholarship achievement. Stipend from \$1800 to \$2200 for a maximum of one regular academic year plus a full summer session. Dependents' allowances are provided for, as well as a limited allowance for travel to the student's institution. Application deadline: early January, awards in mid-March.

6. *Cooperative Graduate Fellowships* (annual awards): Application is through the participating institution he expects to attend as a fellow. Stipend at an annual rate of \$2200 for either 9 or 12 months.

7. *Summer Fellowships for Graduate Teaching Assistants* (annual awards): Application is through the participating institution. Provides support to selected graduate teaching assistants to enable them to devote full-time to scientific research or study during the summer months. Stipend \$50 to \$75 per week with tenure of 8 to 10 weeks.

8. *Undergraduate Science Education Program*: Economics Departments may apply on behalf of undergraduates in economics for support of programs to promote research participation and independent study by able undergraduates. For summer participants, a stipend not to exceed \$60 per week or \$600 for the whole summer may be provided for full-time participation for a period of not less than 8 weeks. For academic-year programs, an average stipend of \$150 per participant for part-time participation requiring from 8 to 10 hours per week of the student's time is provided for, with a maximum per participant of \$300 for the academic year. Proposals may be submitted September 15, January 15, and June 15 respectively.

9. *Undergraduate Scientific Equipment Program*: Equipment grants designed to assist in the purchase of scientific equipment for undergraduate instruction. This program does

not encompass economics in general, but does include statistics. A maximum per proposal of \$25,000 is provided for, with a requirement of a matching contribution by the recipient institution from nonfederal sources of at least 50 per cent of the direct cost.

Inquiries concerning fellowship programs and undergraduate equipment should be addressed to Division of Scientific Personnel and Education, National Science Foundation, Washington, D.C.

THE EDWIN FRANCIS GAY MEMORIAL PRIZE IN ECONOMIC HISTORY

The Economic History Association announces a biennial prize competition for the best unpublished manuscript in the general field of economic history. The award, called the Edwin Francis Gay Memorial Prize in Economic History, will be \$1,500.00 plus payment of costs required to assure publication of the prize-winning manuscript. Funds for the prize will be contributed by the Council on Research in Economic History.

Preference will be given to manuscripts which combine breadth of enquiry and insight; which open up new areas of scholarship; which explore analytically major changes or developments in economic processes or institutions. No award will be made if, in the opinion of the judges, no manuscript is of acceptable quality.

The competition is open to any U.S. or Canadian scholar. Manuscripts must be in English and should not exceed the equivalent of 350 printed pages. Two copies should be submitted. The manuscript should contain no internal evidence of authorship, but should be accompanied by a signed letter.

Manuscripts should be sent to Ralph W. Hidy, Secretary of the Economic History Association, Morgan Hall, Graduate School of Business Administration, Harvard University, Boston 63, Massachusetts, before July 15, 1962.

Announcements

The Group for Afro-Asian Social Studies of the University of Cambridge has established a documentation center in the Faculty of Economics building. The center contains reports on economic, political and social questions and a bibliography arranged under regions and subjects. Research programs and interdisciplinary seminars are being organized and the Inter-Disciplinary Seminar on African Problems, which has been held in Cambridge the past two years, will be attached to the Centre. Inquiries about the Documentation Centre should be addressed to the Librarian, Miss Julia Allen, Afro-Asian Group, Faculty of Economics, Sidgwick Ave., Cambridge, England. Information about the Group's program may be addressed to Mr. Kenneth Berrill at the same address.

The City College, Hunter College and Brooklyn College of the City University of New York are offering an interdisciplinary program in Russian Area Studies which will lead to the degree of Master of Arts in Russian Area Studies. Courses are offered in Russian history and civilization, economics, literature, education, psychology, and political theory and practice. Inquiries may be sent to the Graduate Divisions of the participating colleges.

The Harvard Graduate School of Business Administration announces the availability of funds to aid archivists, librarians, and researchers interested in investigating topics in economic and business history or in studying the acquisition and handling of archival material, manuscripts, and books in this field. The School's unique resources in these areas will be available to such persons during the summer of 1962. Members of the Business History Group and the staff of Baker Library will be available for consultation and guidance, but applicants who receive assistance will be free to pursue their projects as they think best. The criterion for awarding financial aid will be primarily the extent to which the use of the School's resources can be expected to advance proposed projects. Inquiries may be addressed to Ralph W. Hidy, Morgan 304, Harvard Graduate School of Business Administration, Soldiers Field, Boston 63, Massachusetts.

Harvard University announces a new program of research fellowships in Forest Resources. These fellowships carry stipends up to \$15,000, the amount of each award depending on the professional status and needs of the recipient. Proposed research on scientific, economic, political, administrative, and legal aspects of forestry and forest management comes within the scope of the program. Address the Committee on the Charles Bullard Fund for Forest Research, Littauer Center 123, Harvard University, Cambridge 38, Mass.

Under the name, Colegio Nacional de Economistas de Cuba (en el Exilio), an organization of Cuban economists in exile has been formed with its headquarters in Miami, Florida. The founding members had been members of the Colegio Nacional de Economistas de Cuba which was constituted in Cuba in 1956. Dean of the new organization is Professor Luis J. Abalo; and the address is P.O. Box 35-416, Miami, Florida.

In cooperation with the Agency for International Development, Michigan State University is helping develop the University of Nigeria which was established in 1960 at Na ukka, Nigeria. The University, which now has a student body of 1,000 and a staff of 100, is in urgent need of books in agriculture, business administration, economics, finance, and in fact most fields. Books may be sent to: Dr. George H. Axinn, Coordinator, University of Nigeria Program, A-4 Wells Hall, Michigan State University, East Lansing, Michigan.

Deaths

G. E. Britnell, professor and head, department of economics and political science, University of Saskatchewan, October 14, 1961.

Frederick S. Deibler, professor emeritus, Northwestern University; secretary-treasurer, American Economic Association, 1926-35; December 26, 1961.

James L. Dohr, emeritus professor of accounting, Columbia University Graduate School of Business, November 24, 1961.

Luigi Einaudi, first president of Italy; honorary member of the American Economic Association; October 30, 1961.

A. Anton Friedrich, New York University, April 1961.

James K. Hall, University of Washington, January 5, 1962.

Orville Hall, College of Business Administration, University of Arkansas, September 27, 1961.

John J. Long, Fryeburg, Maine.

Clarke D. Pease, Fairview, Tennessee, September 4, 1961.

Harry Sherr, U.S. Department of Agriculture, December 9, 1961.

Paul Studenski, professor emeritus of economics, School of Commerce, Accounts, and Finance, New York University, November 2, 1961.

Ray B. Westerfield, emeritus professor of economics, Yale University; secretary-treasurer, American Economic Association, 1921-22, vice-president 1925; September 12, 1961.

Leo Wolman, emeritus professor of economics, Columbia University; National Bureau of Economic Research; October 2, 1961.

Retirements

E. Clair Bancroft, Colgate University, February 1961.

E. T. Bullock, University of Miami School of Business Administration, June 1962.

C. K. Ganong, Purdue University, June 1962.

M. Slade Kendrick, Cornell University, June 1962.

Victor P. Morris, dean emeritus, University of Oregon, December 1962.

Vera K. Russell, director, Bureau of Business Research, New York State Department of Commerce, November 1961.

Visiting Foreign Scholars

Ljubisa Adamovic, Institute for International Politics and Economy, Belgrade, Yugoslavia: visiting lecturer in economics, Florida State University, spring semester, 1962.

John Jewkes, Oxford University, Oxford, England: visiting professor Princeton University, fall term 1961-62.

Jean St. George Kerr, University of Melbourne: visiting lecturer in accounting, Columbia University, Graduate School of Business, spring term, 1962.

Alexander Lamfalussy, Director of Economic Research, Banque de Bruxelles: visiting lecturer in economics, Yale University.

Peter Mathias, Queen's College, Cambridge, England: visiting lecturer in economics, department of political economy, University of Toronto.

Dudley G. Seers, Economic Commission for Latin America, Santiago, Chile: visiting professor of economics, Yale University.

Jan Tinbergen, Netherlands School of Economics, Rotterdam: Philips Visitor, Haverford College, April 1962.

Janusz G. Zielinski, The Central School of Planning and Statistics, Warsaw, Poland: visiting lecturer in economics, Yale University.

Promotions

Victor L. Andrews: assistant professor, Graduate School of Business Administration, Harvard University.

Philip W. Bell: professor of economics, Haverford College.

Maurice C. Benewitz: associate professor of economics, The City College of New York.

Marion A. Buck: associate professor of business administration, College of Business Administration, Syracuse University.

Elwood Buffa, professor of production management, School of Business Administration, University of California, Los Angeles.

Joseph Carrabino: professor of production management, School of Business Administration, University of California, Los Angeles.

Charles J. Christenson: assistant professor, Graduate School of Business Administration, Harvard University.

Alfred H. Conrad: associate professor, Graduate School of Business Administration, Harvard University.

Stanley L. Dolins: assistant professor of economics, United States Air Force Academy.

M. Mason Gaffney: professor of agricultural economics, University of Missouri.

John I. Griffin: professor of economics, The City College of New York.

Neil E. Harlan: professor, Graduate School of Business Administration, Harvard University.

Leon E. Hay: professor of accounting, School of Business, Indiana University.

Donald D. Hester: assistant professor of economics, Yale University.

Arthur M. Johnson: associate professor, Graduate School of Business Administration, Harvard University.

Douglas N. Jones: assistant professor of economics, United States Air Force Academy.

Gordon M. Kaufman: assistant professor, Graduate School of Business Administration, Harvard University.

William N. Kinnard, Jr.: professor of finance and real estate, University of Connecticut.

Philip A. Klein: associate professor of economics, The Pennsylvania State University, University Park, Pennsylvania.

Marvin E. Lee: assistant professor of economics, Hofstra College.

Ch'ung-tai Lu: associate professor of economics, Baldwin-Wallace College.

Bevars D. Mabry: associate professor of economics, College of Business Administration, Bowling Green State University.

E. W. Martin, Jr.: professor of business administration, School of Business, Indiana University.

David Moment: assistant professor, Graduate School of Business Administration, Harvard University.

Monroe Newman: professor of economics, The Pennsylvania State University.

Robert L. Peterson: assistant professor, Graduate School of Business Administration, Harvard University.

J. Richard Powell: professor, department of economics, Long Beach State College.

Gustav Ranis: associate professor, department of economics, Yale University.

Robert Scharf: professor of social sciences, Georgia Institute of Technology.

Harry Simons: professor of accounting, School of Business Administration, University of California, Los Angeles.

J. Douglas Snider: associate professor of management, School of Business, Indiana University.

Thirukodikaval N. Srinivasan: assistant professor of economics, Yale University.

Robert C. Turner: distinguished service professor, School of Business, Indiana University.

Robert F. Vandell: associate professor, Graduate School of Business Administration, Harvard University.

Immanuel Wexler: assistant professor of economics, University of Connecticut.

Administrative Appointments

Henry S. Ang: assistant professor of economics and chairman of the department, Tougaloo Southern Christian College.

Walter D. Barndt: administrative director of the advanced management program, Graduate School of Business Administration, Harvard University.

Norman N. Bowsher: assistant vice president, Federal Reserve Bank of St. Louis.

Alpha C. Chiang: chairman, department of economics, Denison University.

Meredith Givens: senior research staff, and executive officer for international program, Institute of Public Administration, New York.

William I. Greenwald: acting chairman, department of economics, The City College of New York.

Samuel P. Hayes: director, Center for Research on Economic Development, University of Michigan.

John E. Jeuck: acting associate dean, Graduate School of Business, University of Chicago.

Alex J. Kondonassis: chairman, department of economics, University of Oklahoma.

Robert F. Lanzillotti: head, department of economics, Michigan State University.

John P. Lewis: chairman, department of business economics and public policy, Indiana University.

James S. Lipscomb: associate director of overseas relations, Graduate School of Business Administration, Harvard University.

Norman Locksley: U. S. Army, program coordinator, Allied Forces Southern Europe, Naples, Italy.

James H. Lorie: director of research, Graduate School of Business, University of Chicago.

Howe Martyn: professor of international business and assistant director, international business program, School of Business Administration, The American University.

James A. Morris: dean, School of Business Administration, University of South Carolina.

Garland C. Owens: associate dean, Columbia University Graduate School of Business.

E. Bryant Phillips: chairman, department of economics, University of Southern California.

W. George Pinnell: acting chairman, department of finance, School of Business, Indiana University.

Lawrence S. Ritter: chairman, finance department, Graduate School of Business Administration, New York University.

Richard H. Slavin: chairman, department of economics, Bethany College.

Anthony M. Tang: acting director, graduate program in economic development, Vanderbilt University.

N. Arnold Tolles: Board of Directors, New York State Council on Economic Education.

Guy W. Trump: dean, School of Business Administration, Emory University.

Henry H. Villard: chairman, department of economics, The City College, New York.

Howard A. Ward: associate director, Institute for Business Services and associate professor of economics, University of Detroit.

Harold L. Wattel: chairman, division of business, Hofstra College.

Marshall D. Wattles: director, Honors College, University of Oregon.

Jack R. Wentworth: director of the Bureau of Business Research and assistant professor of business administration, School of Business, Indiana University.

Appointments

William Abraham: professor, Graduate School of Arts and Science, New York University.

Ralph L. Andreano: assistant professor, Harvard University Graduate School of Business Administration.

Gordon C. Armour: assistant professor of management, School of Business, Indiana University.

George D. Bailey: Regents professor of accounting, School of Business Administration, University of California at Los Angeles.

N. Robert Bartell: acting assistant professor of finance, School of Business Administration, University of California at Los Angeles.

Yoram Barzel, University of Chicago: assistant professor, University of Washington.

Walter P. Blass, R. B. Blass Company: economist, Chief Statistician's Division, A T & T Co.

Dwight M. Blood, Wyoming Legislative Council: fiscal economist, staff of the Office of Tax Analysis, Department of the Treasury.

Patrick M. Boarman, University of Wisconsin-Milwaukee: associate professor of economics, Bucknell University.

Ralph Bristol, RAND Corporation: fiscal economist, staff of the Office of Tax Analysis, Department of the Treasury.

James E. Brown: assistant professor, School of Business Administration, Emory University.

R. Gene Brown: assistant professor, Harvard University Graduate School of Business Administration.

Robert D. Buzzell: assistant professor, Harvard University Graduate School of Business Administration.

George Chacko: acting assistant professor of statistics, School of Business Administration, University of California at Los Angeles.

Edward L. Claiborn: instructor in economics, United States Air Force Academy.

James D. Clokey III: instructor in economics, Washington and Jefferson College.

Morris Cohen, The City College of New York: lecturer in economics, Graduate Division, College of Business Administration, St. John's University, New York.

Arnold C. Cooper: instructor in business administration, Harvard University Graduate School of Business Administration.

Jon S. Cunningham: instructor in economics and statistics, Graduate School of Business, University of Chicago.

Clarence H. Danhof, Tulane University: Brookings Institution.

Robert L. Dickens: professor, department of economics and business administration, Duke University.

Eldon J. Dvorak, University of Washington: assistant professor, department of economics, Long Beach State College.

Robert V. Eagly: assistant professor of economics, Wayne State University.

Edward C. Ettin: assistant professor, department of economics and business administration, Duke University.

George J. Feeney, General Electric Company: visiting professor of economics, Yale University.

Rachel Floersheim: lecturer, The City College of New York.

Kenneth U. Flood: visiting lecturer in business administration, Harvard University Graduate School of Business Administration.

Lawrence E. Fouraker: lecturer in business administration, Harvard University Graduate School of Business Administration.

Henry J. Frank: associate professor of economics, Fairleigh Dickinson University.

Lee E. Glick: assistant professor of economics, Washington and Jefferson College.

Amor Gosfield: lecturer, Wharton School, University of Pennsylvania.

Robert C. Goshay: acting assistant professor of finance, School of Business Administration, University of California at Los Angeles.

Michael A. Hall: lecturer in economics, Hunter College.

Michel D. A. Hervé, Harvard University: assistant professor, department of economics, Long Beach State College.

Alan W. Heston: assistant professor of economics, Yale University.

James E. Hibdon, Texas A. & M.: associate professor of economics, University of Oklahoma.

William R. Hoskins: assistant professor of international business administration, School of Business, Indiana University.

Richard Hyse: assistant professor of economics, Oswego State College.

E. A. J. Johnson: visiting professor of economic history, School of Advanced International Studies, Johns Hopkins University.

Norman Kaplan: Xerox professor of international economics, department of economics, University of Rochester.

Harold H. Kassajian: acting assistant professor of marketing, School of Business Administration, University of California at Los Angeles.

William B. Kelly, Fletcher School of Law and Diplomacy: international economist, Department of State.

Marshall R. Kolin: assistant professor, Harvard University Graduate School of Business Administration.

John M. Kuhlman: associate professor of economics, University of Missouri.

Max E. Lupul: acting assistant professor of marketing, School of Business Administration, University of California at Los Angeles.

- Feng-hwa Mah, University of California: assistant professor, University of Washington.
- Edwin Mansfield: visiting associate professor of economics, Yale University.
- Hernan J. Mejia: instructor in economics, University of the Andes, Bogotá.
- Ryoichi Mikitani: assistant professor of money and banking, Kobe University of Commerce.
- Demetrius Moutsanides, University of Michigan: economist, Seattle-First National Bank.
- Richard A. Musgrave, Johns Hopkins University: professor of economics and public affairs, Princeton University.
- Lee C. Nehrt: assistant professor of international business administration, School of Business, Indiana University.
- E. William Noland: Ford Foundation visiting professor of business administration, School of Business, Indiana University.
- Benjamin Okner, Survey Research Center, University of Michigan: fiscal economist, staff, Office of Tax Analysis, Department of the Treasury.
- Mancur L. Olson: instructor in economics, United States Air Force Academy.
- Gerald Owens, U.S. Census Bureau: U.S. Department of Agriculture, Ohio State University.
- William G. Panschar: associate professor of marketing, School of Business, Indiana University.
- James A. Papke, Wayne State University: associate professor of economics, department of economics, School of Industrial Management, Purdue University.
- Charles A. Partin: assistant professor, department of business administration and economics, New Mexico State University.
- Mr. Gerald A. Pinsky, New York University: instructor, Washington Square College.
- John W. Pratt: associate professor, Harvard University Graduate School of Business Administration.
- G. David Quirin: assistant professor of finance, University of British Columbia.
- Ruth Rasch, Johns Hopkins University: fiscal economist, staff, Office of Tax Analysis, Department of the Treasury.
- Myron H. Ross: associate professor, department of economics, Western Michigan University.
- Richard Rowan: lecturer in industry, Wharton School, University of Pennsylvania.
- Peter Schran: assistant professor of economics, Yale University.
- Harry S. Schwartz, Federal Reserve Bank of San Francisco: advisor to the Federal Home Loan Bank Board, San Francisco.
- Joseph N. Seward, San Francisco State College: assistant professor, department of economics, Long Beach State College.
- W. Geoffrey Shepherd: instructor in economics, Yale University.
- William O. Shropshire: assistant professor, School of Business Administration, Emory University.
- Nelson L. Smith: visiting professor of business, Columbia University Graduate School of Business, 1962.
- Donald R. Snodgrass: instructor in economics, Yale University.
- Alan A. Spera: assistant professor of economics, The City College, New York.
- Koji Taira, Stanford University: assistant professor, University of Washington.
- Gordon Tullock: associate professor of economics, University of Virginia.
- Daniel H. Wagner: lecturer, Wharton School, University of Pennsylvania.
- Gerald O. Wentworth: visiting associate professor, Harvard University Graduate School of Business Administration.

Andrew B. Whinston: lecturer, departments of economics and industrial administration, Yale University.

Murray Yanowitch: assistant professor of economics, Hofstra College.

June M. Zaccane: instructor in economics, Hofstra College.

Leaves for Special Appointments

Bela Balassa, Yale University: assistant professor of economics, University of California, Berkeley, 1961-62.

Roger L. Bowlby, Michigan State University: consultant, Michigan Employment Security Commission, 1961-62.

Harry G. Brainard, Michigan State University: visiting professor, University of Arizona, Spring 1962.

Harvey E. Brazer, University of Michigan: director, Tax Analysis, U.S. Treasury Department.

Richard E. Caves, University of California, Berkeley: special assignment at the White House, Washington, D.C., September-December 1961.

Frank C. Child, Michigan State University: visiting associate professor, Stanford University, 1961-62.

R. Kirby Davidson, Purdue University: economic advisor to the social sciences division, Rockefeller Foundation, February 1962 for one year.

Dan H. Fenn, Jr., Harvard University Graduate School of Business Administration: staff of the President of the United States.

Lincoln Gordon, Harvard University Graduate School of Business Administration: U.S. Ambassador to Brazil.

J. Richard Huber, University of Washington: director, Economic Advisory Mission to Government of Afghanistan.

Thomas Mayer, Michigan State University: visiting associate professor, University of California, Berkeley, 1961-62.

Arthur M. Okun, Yale University: Council of Economic Advisors, Washington, D.C., 1961-62.

W. A. Paton, University of Michigan: visiting professor of accounting, University of Florida, second semester, 1961.

Hugh T. Patrick, Yale University: Ford Foundation sponsored program, to teach at the University of Bombay, 1961-62.

Merton J. Peck, Harvard University Graduate School of Business Administration: with the Comptroller of the Department of Defense, Washington.

Warren L. Smith, University of Michigan: staff, President's Council of Economic Advisers, 1962-63.

Jacob A. Stockfish, School of Business Administration, University of California at Los Angeles: Comptroller's Office, Pentagon, Fall 1961-Spring 1962.

Milton C. Taylor, Michigan State University: tax consultant to Pan American Union with special assignment in Honduras, Fall 1961.

James Tobin, Yale University: President's Council of Economic Advisers, 1961-62.

Lloyd Ulman, University of California, Berkeley: senior labor economist, Council of Economic Advisers, 1961-62.

Raymond Vernon, Harvard University Graduate School of Business Administration: consultant to the Undersecretary of State for Economic Affairs.

Henry H. Villard, The City College of New York: director, Economics Division, Ford Foundation, February-July, 1962.

Jay Wiley, Purdue University: economic advisor to the Undersecretary of State for Economic Affairs.

Resignations

Evan B. Alderfer, Wharton School, University of Pennsylvania, June 1961.

Frank S. Deming, Wharton School, University of Pennsylvania, June 1961.

Randolph S. Driver, Wharton School, University of Pennsylvania, June 1961.

James M. Fremgen, School of Business, Indiana University.

Robert Frye, School of Business Administration, University of California at Los Angeles, June 1961.

Philip Neff, School of Business Administration, University of California at Los Angeles, Fall 1961.

Roger Ulvestad, School of Business Administration, University of California at Los Angeles, June 1961.

Herbert S. Unterberger, Wharton School, University of Pennsylvania, June 1961.

Maneck S. Wadia, School of Business, Indiana University.

C. Arthur Williams, Wharton School, University of Pennsylvania, June 1961.

J. Peter Williamson, Harvard University Graduate School of Business Administration.

Miscellaneous

•Walter Adams, Michigan State University, appointed member of U.S. Advisory Commission on Educational Exchange.

John P. Henderson, Michigan State University, appointed consultant, Administration, Wage & Hour & Public Contracts Division, U.S. Department of Labor, 1961-62.

Robert S. Herman, director of research and fiscal policy, State of New York, division of the budget, has recently returned from a three month United Nations mission as an adviser to the government of Greece.

Clifford Hildreth, Michigan State University, appointed editor, *Journal of the American Statistical Association*.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

- Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Labor economists: Department of Labor has openings for work in the fields of wages, manpower, employment, labor and industrial labor conditions and related fields. Salaries range from \$6,435 to \$13,730 depending upon experience and training. To apply, send résumé or Standard Form 57 to the Executive Secretary, Board of U.S. Civil Service Examiners, U.S. Department of Labor, Washington 25, D.C.

Economics and statistics: The Federal Trade Commission has vacancies for a limited number of economists. Candidates should have thorough academic training in economics and statistics. Preference will be given to candidates with training and research experience in the area of industrial organization. Some are for economists who conduct research in the area of industrial organization and behavior. Others are for economists providing economic assistance in the legal case work of the Commission. Vacancies exist for persons qualifying for Civil Service grades ranging from GS-9 to GS-14. Beginning grades and salaries vary, depending on experience and training. Qualified candidates with Ph.D.'s but without experience may receive a beginning grade of GS-12, which has a salary range of \$8,955 to \$10,255. Vacancies exist up to the GS-14 levels for persons with graduate training and with substantial research experience. The salary range for a GS-14 is \$12,210 to \$13,510. Write: Willard F. Mueller, Director of the Bureau of Economics, Federal Trade Commission, Washington 25, D.C.

Industrial organization, trade regulation, industrial concentration, structure of industry, price behavior: The Antitrust Division of the U.S. Department of Justice has openings for economists in Washington, D.C. Candidates should possess a background of education or experience in above fields. Duties involve the application of economic analysis to the enforcement of the antitrust laws. All positions are within the competitive civil service; entrance salaries range from \$5,355 to \$10,635 per annum. Write: Mr. John W. Adler, Chief, Personnel Office, Department of Justice, Washington 25, D.C.

Accounting: A small collegiate school of business in a metropolitan area in New England has a faculty opening in Accounting Department starting fall of 1962. Prefer applicants under 35 with Ph.D. or substantial completion of work toward Ph.D. Full-time position; rank of instructor or assistant professor; no previous teaching experience necessary; salary open; nine-month school year. P245

Agricultural economist: Production economics research; rank and salary determined by education and research but range of \$8,500-\$11,000 possible. Short-term applicants unwanted. Supply information required in Federal Form No. 57. Interested parties

apply Director, Land Study Bureau, University of Hawaii, Honolulu 14, Hawaii.

Economist: Ph.D. qualified in intermediate theory and national income. Must also be willing to teach principles. Classes under 40. Excellent retirement and disability program. Salary \$7,200 and up for nine months. Permanent, beginning September, 1962. Send application to Dr. H. F. Heller, Vice-President, Eastern Illinois University, Charleston, Illinois.

Business economics, finance, marketing, business organization: Catholic college in eastern Canada has opening for a man with advanced degree in business administration. Teaching and business experience preferred. Rank (lecturer or assistant professor) and salary according to qualifications and experience. Appointment tenable from September 1, 1962. Please submit complete résumé including salary. Write to Francis J. Hayes, Chairman of Economics Department, Loyola College, Montreal, Canada.

Economics: Instructor or assistant professor, to teach beginning course in statistics, but with preparation in beginning and advanced economics, with at least a master's degree. Some teaching or business experience preferred but not determining factor. Teaching load 12 to 15 hours; salary from \$5,000-\$6,800 for academic year, depending on degree and experience. T.I.A.A., sabbatical leaves, free tuition for faculty children available. Lutheran Church supported coeducational liberal arts college, 800 students. Write to Dean Wilhelm Reuning, Susquehanna University, Selinsgrove, Pennsylvania.

Technical assistant: For its program of technical assistant to the developing countries, the I.L.O. is looking for experts in the formulation and implementation of employment objectives in economic development to be assigned by the I.L.O. to serve as a member either (1) of the staff of a regional economic development institute to be set up in Latin America and later to be set up in Asia and Africa; or (2) of a group of experts advising a government on economic development planning and programming; or a combination of these functions. For details write to the Washington Branch Office, International Labor Office, 917 15th Street, N.W., Washington 5, D.C.

Marketing and applied economics: Presbyterian-related liberal arts college invites applications for appointment of assistant professor. M.A. required; Ph.D. preferred. Salary \$5,000 to \$7,000. Courses to be taught in marketing and allied subjects in economics. Write Ralph M. Sayre, Dean of the College, College of Idaho, Caldwell, Idaho.

Accounting: University of Nevada has a vacancy for an assistant professor to teach courses in elementary and intermediate accounting. C.P.A., M.A. or Ph.D. required. Applications should be sent to Andre Simmons, Chairman, Division of Business Administration and Economics, University of Nevada, Southern Regional Division, Las Vegas, Nevada.

Economics: Assistant professor in economics. New England state college, about 3,700 students. B.A., B.S., and M.A. degrees. Beginning salary \$7,280 for ten months with additional compensation for six weeks summer session. Begin September, 1962.

P250

Business finance: Finance department in accredited college and graduate school of business administration in relatively large eastern city needs a man to teach commercial financing; strength should lie in functional aspects of business finance, credits, analysis of statements, and commercial-bank lending operations, with auxiliary interests in an area such as investments, insurance, or mortgage banking. Doctorate or completion of course work with dissertation in progress desired; M.B.A. and/or LL.B. background preferred. Combination of 12-hour load, good teaching schedule, and minimum of other duties permits long periods of uninterrupted time for research and writing. Large banks and national corporate headquarters located nearby. Rank of associate professor and salary of \$8,500 for eleven months if qualifications suitable. Starting date September, 1962.

P251

Economics: Midwestern municipal university has full-time opening for an instructor; must be Ph.D. or near; expected to teach introductory courses plus some advanced undergraduate courses; labor economics background preferred but not essential; specialization and research not as important as good teaching ability; salary, with Ph.D., \$6,000 to \$6,900, depending on background; starting September, 1962.

P252

Transportation economist: American foundation offers short-term assignment for senior economist with broad experience in transportation field, to serve as a consultant in India for a period of six months. Position requires ability to do research on problem of economic and functional co-ordination of surface and air transport facilities and to assess their development potentials. Consultant will be paid fee corresponding to present salary, incentive bonus, and expenses. P253

Economist: American foundation offers short-term assignment for senior economist with experience in regional development programs in underdeveloped areas to serve as a consultant in India for a period of six months. Position requires ability to analyze pattern of regional development, make long-range projections and evaluate current programs to achieve a balanced growth and development of regional areas. Consultant will be paid fee corresponding to present salary, incentive bonus, and expenses. P254

Economics and business administration: Liberal arts college of 700 students in mid-west, opening as head of department of economics and business administration. Ph.D. in economics and some teaching experience required. Salary \$7,500 to \$11,000 for nine months, depending on qualifications. P255

Principles of economics and accounting: State college in Wisconsin. Prefer Ph.D. or near Ph.D. Salary \$6,500 to \$8,200. P256

Economists Available for Positions

Economic planning, research studies: Man; B.S. Economics, B.S. Foreign Trade, M.A. Business. Eleven years of experience in all phases of comptroller; presently a research analyst with a university. Will relocate. Salary open. E990

Labor economics, labor legislation, collective bargaining, labor market, principles, history of economic thought: Man, 40; Ph.D. Twelve years of college teaching experience; government positions; two books and numerous articles and reviews. E1001

Mathematical economics, economic statistics, national income, economic development and growth: Man, 29; B.Com.(Econ.), Dip. Stat., M.P.H. (Biostat.), course requirements for Ph.D. completed and dissertation in progress (expected to finish by September, 1961). Experience in research and teaching. Desires teaching and/or research position. E1004

Marketing, statistics, business and industrial economics: Man, 40, married; B.A., M.A., Ph.D. credits completed. Fourteen years of experience in designing and conducting economic and market research projects; contributor of articles to various publications. Seeks research position with business or industry. E1005

Economic theory, history of economic thought, international economics, national accounts, development, European economic history: Man, 41, married; B.B.A., requirements for Ph.D. completed pending dissertation. Teaching experience; fellowship recipient; also business experience. Desires teaching position, northeast or West Coast preferred; salary open. E1007

Economic principles, labor economics, history of economic thought, economic history: Man, 45; M.A., Ph.D. Twelve years of teaching and administrative experience in midwestern universities. Currently engaged primarily in administrative work. Seeks teaching position. E1016

Economics, finance: Man, 43; doctorate degree. Twelve years of college and university teaching experience. Desires to relocate in a university or college beginning in September, 1962. Some advanced study possibilities in related fields are desired, which essentially constitute the reason for a contemplated change. E1017

Economic theory, international economics, development: Man, 41, married; Ph.D. from distinguished midwestern university. Ten years of teaching experience in a variety of branches and on all levels of economics; some government (federal) experience. Credentials and personal interview available on request. Desires to relocate in order to concentrate on all or part of above; however, also interested in related fields. Available summer or fall, 1962. E1018

Principles, theory, managerial economics, private and public finance, statistics, money and banking, business cycles, history of economic thought: Man, 36; Ph.D. Years of successful teaching experience in many areas; some industrial research experience; presently employed. Seeks teaching or corporate position. E1022

Principles of economics, economic thought, real estate, business law, insurance: Man, 40, married; Ph.D. Fourteen years of successful college experience; 6 years in academic administration, including department head. Will consider university teaching or head of a department if position represents an advancement. Especially prefers instruction. E1023

Economics, marketing, finance: Man, 36; B.S., M.B.A., University of California at Berkeley, Ph.D., University of Illinois, 1961. Title of dissertation: "A Study of Financial Expansion in the Basic Chemical Industry, 1947-56." Now on a college faculty in the South. Desires teaching or research position in any big city or California. Salary open. Available in July or September, 1962. E1024

Business administration, industrial organization and policy, personnel management, human relations: Man; A.B., M.B.A., D.S.S. Ten years of teaching experience; 3 years of administration (department head 2; Internal Revenue 1); approximately 10 years in business and industry. Anxious to make a change in June or September, 1962. E1025

Manpower and labor economics: Man, 39, married; Ph.D. Ten years of university teaching; publications; now professor; 1½ years of experience in government and short experience as consultant to government agency. Seeks academic appointment offering opportunity for stimulating teaching in a research-conscious environment. E1028

Marketing, advertising, finance, management, economics: Man, 29; liberal arts graduate, M.A., completing Ph.D. in 1962. Fulbright travel grantee. Experience in research, sales, teaching. Will consider teaching in U.S. 1962-63 but seeks position in India. Résumé available. E1029

Finance, industrial management, mathematics: Man, married; B.A. in chemistry, M.S. and Ph.D. in business administration. Teaching experience; business experience as business manager and chemical purchasing agent; currently professor and head of department of eastern college. Desires teaching position at undergraduate and/or graduate level and/or administrative position. Available in June and/or September, 1962. E1030

Economic theory, international economics, agricultural economics: Man, in early 40's; M.A. in Economics. Fluent French; working knowledge of German and Italian. Desires teaching and/or research position. E1031

Economic principles, labor economics, labor law, public utilities, economic thought, comparative economic systems, economic history: Man, 31, married; B.A., M.A., Ph.D. dissertation in process. Six years of full-time college teaching; member of state panel of arbitrators; consultant to large corporation; recipient of research grant; supervisor of State Department project; experience as research assistant and job analyst. Desires position at liberal arts college or university. Available in September, 1962. E1032

Industrial organization, public finance, economic theory: Man, 38; Ph.D. (Ivy), LL.B., LL.M. Member of state and federal bars. Desires an administrative position with private industry or a teaching-administrative position with a university. E1036

International economics and finance, economic development and history, money and banking, corporation finance, comparative economic systems: Man, 33; Ph.D. Teaching and business research in U.S., Canada, and Europe; publications. Seeks teaching position with opportunities for productive scholarship and research. E1038

Economic theory, history of economic thought, industrial organization, government and business, economic development: Man, 46; Ph.D. Now engaged as economic and marketing consultant. Has had 12 years of teaching experience; 10 years consultation in government and international agencies. Seeks opportunity to teach advanced university courses. Expects appointment of at least associate professorship rank and salary of \$9,500. E1040

Economic theory, statistics, labor economics, industrial organization, international economics: Man, 38, married; currently writing dissertation in industrial organization. Fellowship recipient. Available in June, 1962. E1041

Economic theory, comparative economic systems, underdeveloped areas: Man, 37, American citizen; M.A., completing an interdisciplinary doctorate, economics, psychology, and sociology. Eight years of experience teaching in American colleges; 5 years of foreign residence in Germany, Morocco, Greece, Turkey, Algeria, India, and Pakistan. Assistant professor; provisionally appointed associate professor. Interested in northeast part of U.S. or nearby Canada. Available in June, 1962. E1042

Economic principles, economic history, money and banking, public utilities: Man, 27; M.A., some course work towards Ph.D. Five years of teaching experience. Desires teaching position on college level. E1043

Business research: Man, married; Ph.D. Seeks responsible, challenging position in formulation of management information requirements, computer applications to business, performance evaluation, forecasting, long- and short-range planning, and action recommendations. Compensation according to responsibility. E1044

Labor economics, labor and business law, government and business, marketing, business management: Man, 32; M.B.A. (labor relations), LL.B. Three years in business management; 5 years of teaching. Seeks position that may include administrative duties. Available in summer, 1962. E1045

Economic development, marketing research, international trade, finance: Man, 37, married; M.A. thesis in progress, plus Ph.D. graduate work. Eight years of sales experience; over 5 years of experience in marketing research and analysis of consumer, agricultural, and industrial goods. Bilingual English-Spanish; working knowledge of Italian and Portuguese. Employed. Desires research development position. E1046

Principles, theory, money and banking, labor economics, international economics, economic thought: Man; completing Ph.D. course requirements. Extensive research background; presently lecturer in economics. Desires teaching and research opportunity in eastern or midwestern school. Available in June or September, 1962. E1047

Principles of economics, economic theory, public finance, money and banking, business cycles, business economics, basic statistics: Man, 31; B.A., M.A., Ph.D. expected in 1962. Experience in teaching and research; research publication. Willing to relocate. Desires teaching position and/or research with industry. Available in June or September, 1962. E1048

Theory, mathematical economics, international economics, statistics, public finance: Man, 34, married; Ph.D. Eight years of successful teaching; good number of articles and book reviews. Desires teaching position at graduate level with research opportunities. E1049

Money and banking, monetary and cycle theory, international economics, economic development: Man, 45, married; B.A. (social sciences), M.B.A. (finance), Ph.D. (economics), Northwestern University. Sixteen years of college teaching experience; 10 years as head of six-man department of economics; 2 years foreign service experience in Southeast Asia as economist for U.S. economic aid mission; publications. Desires combination administrative and teaching post. Strong liberal arts college preferred. Available in September, 1962, or January, 1963. E1050

Money and banking, business finance, investments, capital markets, economic principles and theory: Man, 34, married; M.A. (economics), will graduate with Ph.D. (business administration) in June, 1962, dissertation completed. Employed past 5 years in cost accounting and procedure writing with major firm; 4 years of teaching business, economics, and accounting. Seeks teaching, research, or administrative position with university, business, private organization, or government in U.S. or abroad. E1051

Economic theory, international economics, history of economic thought, labor economics, money and banking, comparative economic systems, economic development, economic fluctuations, public finance, industrial organization, economic history: Man, 46; M.A., Ph.D. Years of teaching experience, including graduate teaching; Ford Foundation grant. Now on university faculty. Desires teaching position with a progressive institution. E1052

Business and industrial economics, forecasting, marketing, industrial organization, corporate planning, finance and investments: Man, 29; M.S., all requirements for Ph.D. completed except dissertation. Contributor of articles to publications, public speaking; 5 years of professional experience, including 1 as head of consulting firm; presently a corporate economist with responsibility for long-range planning. E1053

Economic theory, principles, history of thought, business cycles, international economics, development and growth: Man, 65; Ph.D. Fifteen years of teaching experience; professional experience in law and civil service; European background; working knowledge of German and French; some publications here and abroad. Now in tenure with compulsory retirement at 65; in perfect health. Desires teaching position not too far from Erie, Pennsylvania. Salary open. Available in September, 1962. E1054

Economic theory, international economics, planning and analysis, accounting, statistics: Man, 39; doctorate in economics and commerce from a well-known European university. Twelve years of financial management experience in American industry; 6 languages. Interested in administration, teaching, or research. E1055

Development, Communist and international economics: Man, 41; degree in law and economics, Swiss doctorate in economics, dissertation on Yugoslav development policy. Lived under Communist regime; taught economics in Pakistan; visited India, Burma, Nepal; knows most West European countries; speaks English, German, French, Italian, Russian, Serbo-Croat and Slovene; understands Spanish and other Slavonic languages. Excellent references; several publications. Seeks teaching and/or research post. E1056

International economics, underdeveloped areas, particularly Latin-American and Middle East, economic development, world regional blocs, international financial organizations: Man, 45, married; M.A., Ph.D. Experienced in government research; 10 years of teaching experience; wide experience in undergraduate courses. Presently teaching in large midwestern university. Available either in June or September, 1962. E1057

Economic theory, money and banking, mathematics, statistics, economic history (especially European), labor: Man, 27, married; B.Sc. (Econ.), London School of Economics, M.A., U.C.L.A., Ph.D. dissertation to be presented in June, 1962. Publications; British Fulbright scholar; now permanent resident of the U.S. Teaching assistant for past 3 years; research and public lecturing experience. Desires teaching appointment. E1058

Principles, money and banking, corporation finance, business law, elementary accounting: Man, 38, married; M.B.A., LL.B. Nine years of teaching experience; associate dean of small business administration college for 8 years. Can handle all phases of administration, including business responsibilities; previous business experience banking. Will consider teaching position or administrative position or combination of both. Available in summer or fall, 1962. E1059

Economics of foreign agriculture, economic theory, agricultural marketing: Man, 40; B.A., M.A. (economics), M.S., Ph.D. (agricultural economics). Two years as assistant professor, Big Ten university; 3 years as U.S. Department of Agriculture Senior Economist; research and administration in foreign agriculture in Washington, D.C. Listed in *Who's Who in the South and Southwest*; publications in foreign agriculture. Desires teaching and research position with liberal arts college or university. Available in June, 1962. E1060

Statistics, theory, thought, government and business: Man; Ph.D. Department chairman, now on leave as adviser to foreign government, desires change on return in late 1962. E1061

Economics, economic statistics, money and banking, public finance: Man, 41, married; B.A., candidate for M.A., will complete Ph.D. in money and banking, public finance. Over 10 years of experience with U.S. government as analyst and translator (of economics and other material from Chinese to English and from English to Chinese). Also experienced in research, in editing and compiling economic reports, chronology, and directories. Knowledge of French. Desires research position, preferably with federal government or bank. Will consider other opportunities. Available immediately. E1062

Public finance, money and banking, international economics, business cycles, economic policy, history of economic thought, economic theory, statistics: Man, 48, married; graduate European school of economics. Ten years of teaching experience in Europe. Several years of part-time teaching at well-known West Coast university. Desires full-time teaching position. Available in September, 1962. E1063

International finance, economic development, public finance, monetary and fiscal policy: Man, 33; M.A., Ph.D. requirements except dissertation substantially completed. Fellowships; languages; area concentration Western Europe and Southeast Asia. Four years of research experience in government and research organization. Seeks research position. Willing to relocate. E1064

International economics, money and banking, economic development: Man, 31, married; M.A. Canadian born and educated; speaks Italian, French and reads others. Government and teaching experience. Desires teaching position. E1065

Economic theory, history of economic thought, Indian economic history, current economic problems of India, economic statistics, Keynesian economics: Man, in thirties, married; Ph.D., Cambridge University. Over 10 years of teaching experience; publications; research for government of India. Has permanent position at University of Patna. Desires 1-3 year research-teaching appointment at American University, beginning in June, 1962. Dr. Kedarnath Prasad, Patna University, Patna-5, India.

L'INDUSTRIA

Review of Political Economy

Editor: Ferdinando di Fenizio

Summary of Issues n. 3/1961

O. MORGENSTERN	A new look at economic time series analysis
S. CHERUBINO	Observations on Some Fundamental Economic Concepts and on the Rate of Growth
V. AMATO	A Matrix Process for the Solution of Dynamic Multiplier
A. G. PAPANDREOU	Economics as a Science
M. G. KENDALL	Natural Law in the Social Sciences
S. RICOSSA	Business Cycles and the "Cassa Integrazione"
f.d.f.	Italian Businessmen Take an Optimistic View of the Future—Prices and Wages—New Markets for Italian Exports—A Comment on Current Talks between U.K. and the E.E.C.—The Agreements of Punta del Este.

Each number contains Summaries in English of the original articles—Annual subscription rate for Abroad: Lit. 6.000=, Anyone interested may send for a sample copy.

Editorial and Administrative Offices: Via Farneti, 8—Milano (Italy)

ECONOMETRICA

Journal of the Econometric Society

Volume 29, No. 4

October, 1961

CONTENTS

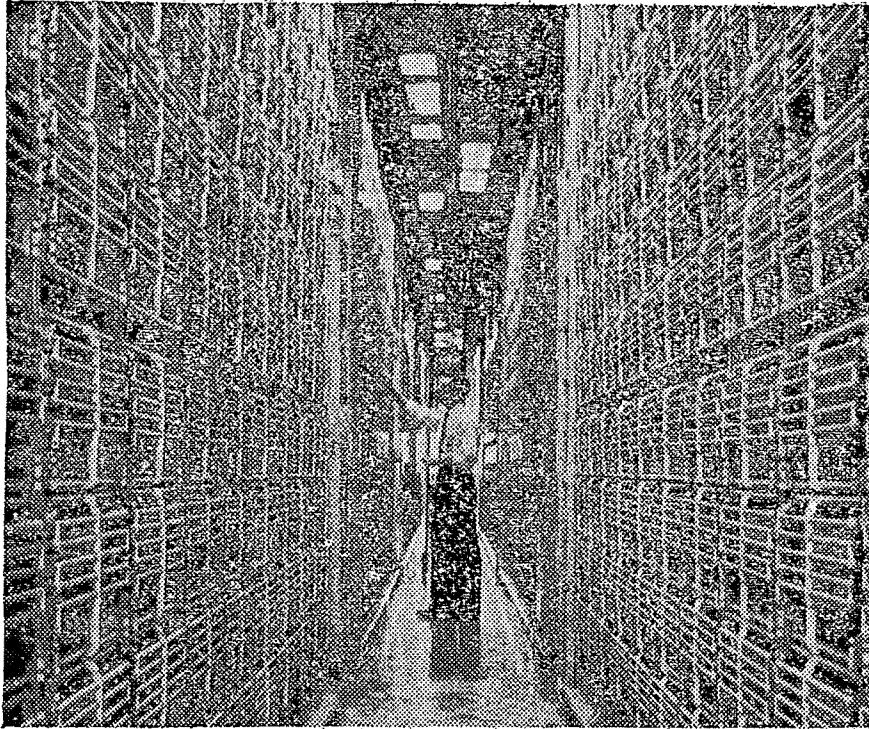
An Exact Method of Consumer Demand Analysis	I. F. Pearce
Stable Paretian Random Functions and the Multiplicative Variation of Income ..	Benoit Mandelbrot
The Error of Forecast for Multivariate Regression Models	John W. Hooper and Arnold Zellner
The Covariance Matrices of Reduced-Form Coefficients and of Forecasts for a Structural Econometric Model	A. S. Goldberger, A. L. Nagar, and H. S. Odsh
Identifiability Criteria in Nonlinear Systems	Franklin M. Fisher
A Unified Statistical Approach to the Index Number Problem	K. S. Banerjee
Best Linear and Best Linear Unbiased Index Numbers	T. Kloek and G. M. De Wit
The Stability of Dynamic Processes	Hirofumi Uzawa
Capacity Expansion and Probabilistic Growth	Alan S. Manne
The Theory of Cost and Production in the Multi-Product Firm	Ralph W. Pfouts
Lags and the Stability of Dynamic Systems	Wassily Leontief
Lags and the Stability of Dynamic Systems: A Reply	J. D. Sargan
Lags and the Stability of Dynamic Systems: A Rejoinder	Wassily Leontief
The Theory and Measurement of Private and Social Cost of Highway Congestion ..	A. A. Walters
An Appropriate Method for Convex Programming	Jaromir Abrham
The Present State of the Consumption Theory	H. S. Houthakker
Technical Change and the Rate of Imitation	Edwin Mansfield
The Decomposition Algorithm for Linear Programs	George B. Dantzig and Philip Wolfe
Quasi-Concave Programming	Kenneth J. Arrow and Alain C. Enthoven
Brief Note on the Life and Work of Hans Staehle	Philippe Carré
Letters to the Editor	Book Reviews
List of Members of the Econometric Society	Announcements and Notes

Published Quarterly

Subscription rate available on request

The Econometric Society is an international society for the advancement of economic theory in its relation to statistics and mathematics.

Subscriptions to *Econometrica* and inquiries about the work of the Society and the procedure in applying for membership should be addressed to Richard Rugles, Secretary, The Econometric Society, Yale University, Box 1264, New Haven, Connecticut, U.S.A.



3 VITAL STEPS

bring you the world's best telephone service

1 • RESEARCH

The telephone was born of research and grows ever more useful the same way. Bell Telephone Laboratories conducts a far-reaching program for research and development—most of it in communications, but much of it defense.

Basic Bell inventions such as the Transistor and the Solar Battery have benefited man in many ways. And constant development of new equipment is revolutionizing telephony. But research alone doesn't bring service improvements and economies.

2 • MANUFACTURE

Research-created equipment must be manufactured to high standards at low cost, and made readily available anywhere in the nation.

That's Western Electric's job. Working closely with Bell Laboratories, Western Electric makes the vast amounts of high-quality equipment required for the telephone network. But the task still remains of putting this research and equipment to work—so they can make daily living easier and more pleasant for you and your family.

3 • OPERATION

Here, twenty-one Bell Telephone Companies step in. They take the results of Bell Laboratories research and Western Electric production and bring them to useful life on your bedside table or kitchen wall or office desk.

Research, manufacture and operation are interdependent and indispensable. Working as a team toward a common goal, they explain why this country has the world's finest telephone service and more telephones than all other countries combined!



BELL TELEPHONE SYSTEM

Owned by more than two million Americans

DIXON-YATES

A Study in Power Politics

Aaron Wildavsky

One of the most widely debated political controversies in recent years, the Dixon-Yates case offers a panoramic view of American politics under the Eisenhower Administration. From the extensive documentation on this case and from a hundred personal interviews, Mr. Wildavsky skillfully reconstructs the extraordinary sequence of events involving crucial issues of public policy: public versus private power and conflict of interest. Many fundamental issues relating to the functioning of the American political system are also involved: the executive decision-making process; coalition politics in a system of fragmented powers; the right of executive privilege to withhold information from Congress; and the role of the regulatory agencies.

\$6.75

CHANGES IN THE LOCATION OF MANUFACTURING IN THE UNITED STATES SINCE 1929

Victor R. Fuchs

Since 1929 there has been a significant shift in the location of manufacturing in the United States which has had and will continue to have a profound effect on the nation's economic, political, and social life. Basing his work largely on unpublished Census of Manufacturing data, the author presents a comprehensive description and analysis of these changes. Mr. Fuchs investigates the determinants of mobility of all manufacturing industries. The effects of industrial structure, natural resources, labor, and markets on growth are considered, as are the relations between mobility and such industry characteristics as growth and concentration.

\$10.00

Selected Yale Paperbounds

GOLD AND THE DOLLAR CRISIS by Robert Triffin \$1.45

THE STRATEGY OF ECONOMIC DEVELOPMENT
by Albert O. Hirschman \$1.45

Yale University Press **Y A** **New Haven and London**

Canadian orders: **L E** **McGill University Press, Montreal 2**

NEW IRWIN TEXTS

MANAGERIAL ECONOMICS: *Text and Cases*. Shows the application of economic concepts to the analysis of business decision problems. By Neil E. Harlan, Charles J. Christenson, and Richard F. Vancil, Graduate School of Business Administration, Harvard University.

CASES IN CAPITAL BUDGETING. Uses capital budgeting theory as a new framework for structuring the teaching of basic finance concepts at either the introductory or intermediate level. By Robert F. Vandell and Richard F. Vancil, Graduate School of Business Administration, Harvard University.

ECONOMIC THEORY IN RETROSPECT. Teaches contemporary economic theory in a new way by depicting it as a body of ideas evolving under the pressure of theoretical criticism. Includes Reader's Guides to economic classics. By Mark Blaug, Yale University.

THE INVESTMENT, FINANCING, AND VALUATION OF THE CORPORATION. Presents a theory or model for finding the investment and financing by a corporation that maximizes the value of its stock. By Myron J. Gordon, Massachusetts Institute of Technology.

INTERNATIONAL TRADE: *Theory and Economic Policy*. Gives special emphasis to the relation between internal and external economic conditions, both from the point of theory proper and economic policy. By Jaroslav Vanek, Harvard University.

UNITED NATIONS AND U. S. FOREIGN ECONOMIC POLICY. A study from the United Nations Project Center for International Studies, Massachusetts Institute of Technology. Paperbound. By Benjamin H. Higgins, University of Texas.

THE DEVELOPMENT OF THE INDIAN ECONOMY. A realistic analysis which stresses the relationships between different branches of the economy and the different factors which affect them. Paperbound. By W. B. Reddaway, University of Cambridge.

LOMBARD STREET: *A Description of the Money Market*. A reprinting of a great and famous classic in economics, originally published in 1873. Paperbound. By Walter Bagehot, with a New Introduction by Frank C. Genovese, Babson Institute.

RICHARD D. IRWIN, INC.

Homewood, Illinois

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

...

PROFESSIONAL MANAGEMENT

Theory and Practice

Theo Haimann

This new, skillfully written text offers tested concepts of management drawn from traditional management theories, tempered with the results of current thinking and recent research in the behavioral sciences. It utilizes the functions of a manager, namely planning, organizing, staffing, directing, and controlling, to make the basic principles of management understandable, relevant, and useful.

556 pages

Now available

\$6.50

THE CONSUMER IN OUR ECONOMY

David Hamilton

Emphasizes consumer economics without neglecting important aspects of consumer education, thus allowing the instructor to stress abstract theory, practicality, or a combination of both. Applies the theory of consumer behavior to various aspects of consumption, and discusses it from the traditional indifference approach as well as from the newer behavioral approach.

473 pages

Now available

\$6.50

MANAGEMENT ISSUES AND EMERGING CONCEPTS:

Readings from the Academy of Management

Edited by Paul M. Dauten, Jr.

An up-to-date, relatively inexpensive supplement appropriate for undergraduate and graduate courses in general management, personnel management, and production management. Parts include: Management History, Management Philosophy, Management as a Science-Art, The Development of Managerial Skills, and Management and the Future. Introductions to each Part and to each selection.

About 275 pages

Paper and cloth covers

Available for fall classes, 1962



Houghton Mifflin Company

BOSTON • NEW YORK • ATLANTA • GENEVA, ILL. • DALLAS • PALO ALTO

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

MONEY AND ECONOMIC ACTIVITY

Readings in Money and Banking, Second Edition

Lawrence S. Ritter

An up-to-date selection of readings designed to stimulate student interest. Contrasting viewpoints are put in perspective by skillful editorial introductions, assuring a minimum loss of classroom time. Selections were chosen for their readability and current pertinence. New sections emphasize commercial banking, the money market, and the differential impact of monetary policy.

457 pages Paper covers 1961 \$4.50

MONEY AND BANKING

Leland J. Pritchard

A well-balanced presentation of practice and theory in the money and banking field, with emphasis on the basic aspects of bank administration as well as on the "economics" of money and banking. Includes tables, charts, and graphs closely integrated with the text; review questions at the conclusion of each chapter; and an extensive bibliography with cross-references. Instructor's Manual available.

783 pages 1958 \$7.25

MONEY, CREDIT, AND PUBLIC POLICY

Lawrence Smith

For money and banking courses, an integration of the subject matter of monetary economics with economics as a whole. Written with assurance, lucidity, and an occasional touch of humor, Professor Smith's distinguished text makes the subject of money and banking come alive for students. A brief bibliography concludes each chapter.

757 pages 1959 \$7.25



Houghton Mifflin Company

BOSTON · NEW YORK · ATLANTA · GENEVA, ILL. · DALLAS · PALO ALTO

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

A new,
major contribution to economic thinking

GARDINER MEANS

Pricing Power and the Public Interest

A Study Based
on Steel

The distinguished American economist here produces an original, creative approach to the pricing policies of the big corporation, in terms of a pioneer analysis of the steel industry and its actual cost and profit margins. Demonstrating that the traditional theory of price regulation by competition is no longer effective, he shows why neither government control nor fragmentation would be in the public interest. Instead, he proposes a new way to achieve a return on investment, consistent with corporate capital growth, that serves the whole economy. "A landmark book in its field."—*The Kiplinger Washington Editors*. 17 charts and 27 tables.

\$7.50 at your bookstore or from Dept. 32

HARPER & BROTHERS, N.Y. 16

MURRAY N. ROTHBARD MAN, ECONOMY AND STATE

In this comprehensive and systematic treatise on economics, the author draws the conclusions logically implied in the fundamental axiom of human action. Written for students and laymen with no prior knowledge of economics as well as for the economist, its clear graphical representations of the major types of economic inter-relationships are an invaluable contribution to the two volume text.

Vol. I—leads step-by-step to an understanding of the structure of varied economies and an examination of the unhampered market. 496 pages

Vol. II—considers the problems of dynamic change and entrepreneurship in a free economy, presents a new theory of monopoly, and refutes the dominant economic fallacies of our age. 544 pages

the two volumes \$20.00

at your bookstore

Van Nostrand

Princeton, New Jersey

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION

1757 K St., N.W. Washington 6, D.C.

Volume 57

March 1962

Number 297

TABLE OF CONTENTS

Probability Inequalities for the Sum of Independent Random Variables	George Bennett
Chance Constraints and Normal Deviates	A. Charnes and A. W. Cooper
On the Use of Correlation to Augment Data	Myron B. Fiering
Statistics We Live By	Martin E. Gainsbrugh
A Distribution-Free Test of Independence with a Sample of Paired Observations	Gerald J. Glasser
The Variance of the Product of K Random Variables	Leo A. Goodman
Some More Estimates of Circular Probable Error	A. R. Kamal
The Combination of Tests Based on Discrete Distributions	Wilfred M. Kincaid
Estimation of Means and Totals from Finite Populations of Unknown Size	James K. Kindahl
Studies of Interviewer Variance for Attitudinal Variables	Leslie Kish
Some Properties of Pascal Distribution for Finite Population	T. E. Matuszewski
The Use of an Iterated Moving Average in Measuring Seasonal Variations ..	Y. S. Leong
Moments of the Radial Error	Ernest M. Scheuer
On the Joint Efficiency of the Estimates of the Parameters of Normal Populations Based on Singly and Doubly Truncated Samples	P. S. Swamy
On Two Methods of Unbiased Estimation with Auxiliary Variates	W. H. Williams
A Note on the Census Survival Ratio Method of Estimating Net Migration	K. O. Zachariah

For further information, please contact: American Statistical Association, 1757 K Street, N.W., Washington 6, D.C.

ASA

THE AMERICAN STATISTICAL ASSOCIATION

INVITES AS MEMBERS ALL PERSONS INTERESTED IN:

1. Development of new theory and method
2. Improvement of basic statistical data
3. Application of statistical methods to practical problems

METROECONOMICA

International Review of Economics

Vol. XIV

No. 2

Uncertainty and market equilibrium	K. Borch
Is investment really unimportant? (2nd part)	B. F. Massel
Welfare criteria with macroeconomic constraints	H. Averch
The output ceiling	Th. Derburg

Board of Editors: C. Bresciani Turrone, E. Fossati (*Managing Editor*), R. Frisch, W. Leontief, G. Lufalla, A. Mahr, J. Marschak, G. U. Papi, R. W. Pfouts, R. Roy, E. Schneider, G. L. S. Shackle, R. Stone, J. Tinbergen, G. Tintner, F. Zeuthen.

Published every four months. Subscription rate \$7 per year (two years \$12). Communications to the editor to be addressed to *Professor Eraldo Fossati*, director of the *Laboratorio di economia Vilfredo Pareto, Università, via Balbi 5, Genova (Italy)*. Communications regarding subscriptions should be sent to *Licinio Cappelli, Corso Italia 12, Trieste* or *G. E. Stechert-Hafner, Inc., 31 East Tenth Street, New York 3, N.Y., U.S.A.*

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Published since 1936

American Sociological Review

Volume 26, No. 6
December, 1961

The Ability Dimension in Human Society
Function and Cause

Goals in Complex Organizations

The Relative Importance of Variables

The Significance of Intra-Occupational Mo-
bility

Experiment on Bureaucratic Authority

Life-Cycle, Career Pattern, and Decision to
Move

Theory of Race and Ethnic Relations

Illegitimacy, Anomie, and Cultural Penetra-
tion

Book Review and Notes

Single Issue \$2.00

Robert E. L. Faris

Ronald Philip Dore

Charles Perrow

Hubert M. Blalock, Jr.

Robert Perrucci

William M. Evan and
Morris Zelditch, Jr.

Gerald R. Leslie and
Arthur H. Richardson

Stanley Lieberman

William J. Goode

Annual Subscription \$8.00

AMERICAN SOCIOLOGICAL ASSOCIATION

New York University,

Washington Square

New York 3, N. Y.

SOCIAL RESEARCH

An international quarterly, founded in 1934, published by the
GRADUATE FACULTY OF POLITICAL AND SOCIAL SCIENCE
of the New School for Social Research, New York

Contents for Winter 1961 (Volume 28, Number 4)

Trends in Economic Thought on UnderdevelopmentH. W. Singer

Constitutional Thought and Aims In Former French Africa ...Ernest Hamburger

Party Discipline Under Federalism: Implications of Australian Experience ..
.....Aaron Wildavsky

Political Action by the Military in the Developing Areas
.....Fred R. von der Mehden and Charles W. Anderson

On the Evolving Strategy of International Monetary Cooperation (Note) ...
.....Haskell P. Wald

Forum—The Case Against Accelerated Depreciation
.....Harold M. Edelstein and Peter L. Bernstein

Book Reviews

Table of Contents and Indexes for Volume 28

Published in Spring, Summer, Autumn, and Winter

Subscription \$7.50 a year, foreign \$8.00—Single copies \$2.00

66 WEST 12th STREET, NEW YORK 11, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE ECONOMIC RECORD

The Journal of the Economic Society of Australia and New Zealand
Published Three Times a Year

Vol. 37

December 1961

No. 80

VICTOR ARGY: The New Zealand Economy 1960-61

Articles

- D. C. ROWAN: Radcliffe Monetary Theory
A. J. REITSMA: The "Excess Costs" of a Tariff and their Measurement
J. KMENTA: Economic Mobility of Immigrants in Australia
A. F. McKEE: The Debate on Interest
R. I. DOWNING & J. E. ISAAC: The 1961 Basic Wage Judgment and Wage Policy

Notes

- A. J. DANKS: Cornelis Weststrate: 1899-1961
BURGESS CAMERON: Hire Purchase and the Stability of Consumption
N. F. DUFTY: An Experimental Approach to the Theory of the Firm
G. D. MCCOLL: Exchange Restrictions and the I.M.F.
H. R. EDWARDS & N. T. DRANE: More Spilt Milk

News and Notes

Reviews

Published four times a year.

Annual Subscription £2. 2. 0

Single Copies 14/-

MELBOURNE UNIVERSITY PRESS

Registered in Australia for transmission by post as a periodical.

BULLETIN FOR INTERNATIONAL FISCAL DOCUMENTATION

Bi-monthly periodical published by the International Bureau of Fiscal Documenta-
tion, HERENGRACHT 196—AMSTERDAM, Netherlands

Vol. XV

No. 5

Zur Frage der Auslegung von Steuergesetzen in Deutschland und in den
Niederlanden (I. Fortsetzung)Prof. Mr. H. Schuttevâer

Pay-Roll in AustraliaJ. A. L. Gunn
Surveys of tax legislation

C.E.C.A.: Etendue de l'exonération fiscale accordée aux fonctionnaires de
la C.E.C.A.

Bundesrepublik Deutschland: Erbschaftsteuer

U.S.A.: Tax Court holds interest-free loan to shareholder creates no taxable in-
come: James T. Wilkes, Jr.

Distribution of property.

Reviews on books and articles dealing with taxation matters.

PRICE: { \$5.00 a year without supplements } or equivalent in
 { \$7.25 a year with supplements } other currencies

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

EL TRIMESTRE ECONOMICO

Director: Oscar Soberón Martínez.—*Comité Editorial:* Jorge Ahumada (Santiago de Chile), Emilio Alanís Patiño, Edmundo Flores, Celso Furtado (Brasil), Emigdio Martínez Adame, Raúl Ortiz Mena, Felipe Pazos, Raúl Prebisch (Santiago de Chile), Raúl Salinas Lozano.

Vol. XXXIX (1)

México, Enero-Marzo de 1962

Núm. 113

SUMARIO

Artículos:

- F. Pazos, *Comentarios a dos artículos sobre la Revolución cubana*
V. L. Urquidí, *El desarrollo latinoamericano, el capital extranjero y la transmisión de la tecnología.*
A. López Romero, *Desarrollo económico de México 1934-1959.*
R. Fernández y Fernández, *Una doctrina sobre reforma agraria.*
H. Max Coers, *El problema de la integración monetaria.*
G. Colm y Th. Geiger, *La programación como una guía para el desarrollo.*
H. Myint, *La teoría clásica del comercio internacional y los países subdesarrollados.*

Documentos:

- Exposición del subsecretario de las Naciones Unidas a cargo de la Comisión Económica para América Latina, Dr. Raúl Prebisch, pronunciada durante la reunión extraordinaria del consejo interamericano económico y social en Punta del Este, Uruguay agosto de 1961.
Conclusiones principales del seminario sobre energía eléctrica en América Latina, celebrado en agosto en la ciudad de México.
Resumen del Plan de Desarrollo Económico de Cuba para 1962.

NOTAS BIBLIOGRAFICAS, REVISTA DE REVISTAS,
PUBLICACIONES RECIBIDAS

El Trimestre Económico, aparece en los meses de enero, abril, julio y octubre de cada año. La suscripción anual cuesta: en México \$50.00, en el extranjero Dls. 5.00. Número suelto: en México \$15.00 an el extranjero Dls. 1.50. Lo edita:

FONDO DE CULTURA ECONOMICA

Suscripciones, anuncios, quejas, etc., Tel: 24-22-04, Srita. Ma. de la Luz Vázquez (9:00 a 13:00 y 16:00 a 18:00 horas). Av. de la Universidad 975, México 12, D. F.—Córdoba 2064, Buenos Aires.

THE INDIAN ECONOMIC JOURNAL

Vol. IX

January 1962

No. 3

I Articles

- Problems of International Economic PolicyB. K. Madan
Relative Abundance of the Factors and International TradeJacob Viner
On the Estimability of Gross National Product in IndiaK. Mukerji
Monetary Analysis in India: 1948-49—1958-59V. C. Shah
The Indian Money Market: An Analysis of Money DemandD. Bishwas

II Reviews

III Notes

All Communications should be sent to

**The Editor, The Indian Economic Journal,
Department of Economics, University of Bombay
Bombay 1.**

Per copy: Rs. 5 or 7/6 d
or \$1.25 post free

Per annum: Rs. 15
or £1-5 or \$4.00 post free

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE SOUTH AFRICAN JOURNAL OF ECONOMICS

Editors:

W. J. BUSSCHAU

C. S. RICHARDS

H. M. ROBERTSON

(Managing Editor)

Vol. 29, No. 3

September 1961

Land Reform in the Bantu Areas and Its Effect upon Urban Labour	D. HOBART HOUGHTON
Review of the Financial and Economic Situation in South Africa	M. H. DE KOCK
John Company at the Cape	MARCUS ARKIN
The Case for Minimum Wage Legislation in South Africa	L. B. KATZEN
Comment	W. F. J. STEENKAMP
Private Enterprise in the Soviet Union	J. S. PRYBYLA

Reviews

- Notes and Memoranda

Recent Publications

Editorial communications, contributions (in duplicate), and books for review should be addressed to the Joint Editors, P.O. Box 5316, Johannesburg.

REVISTA DE ECONOMIA POLITICA

Consejo de Redacción

Enrique FUENTES QUINTANA

Gonzalo ARNAIZ VELLANDO, Arturo CAMILLERI LAPEYRE, Agustín COTORRUELO SENDA-GORTA, Fabian ESTAPE RODRIGUEZ, Joaquín FERNANDEZ CASTANEDA, Javier IRASTORZA REVUELTA, José Mira RODRIGUEZ, Jaun PLAZA PRIETO, Luis A. ROJO DUQUE, Antonio J. SANCHEZ PEDRENO, Alfredo SANTOS BLANCO, Juan SARDA DEXEUS, Ramón TRIAS FARGAS, José Luis UGARTE DEL RIO, Manuel VARELA PARACHE, Juan VELARDE FUERTES, Huberto VILLAR SARRAILLET.

Secretario: Angel ALCAIDE INCHAUSTI

Núm. 30

Enero-Abril, 1.962

J. VELARDE FUERTES: "Algunos Problemas de la Estructura y Desarrollo de la Economía Española."

HOLLIS B. CHENERY: "El empleo del análisis interindustrial en la programación económica."

A. SERRA RAMONEDA: "Programación lineal y ordenación de la producción."

J. CAMPO PAMPLIEGA: "El sector público y la economía española (Años, 1.954, 1.955, 1.956 y 1.957)."

ESTUDIOS Y DOCUMENTOS DE ECONOMIA ESPANOLA

A. FLOREZ ESTRADA: "Del uso que debe hacerse de los bienes nacionales." "Contestación de D. Alvaro Flórez Estrada a las impugnaciones hechas a su escrito sobre el uso que debe hacerse de los bienes nacionales."

ESTUDIOS Y DOCUMENTOS DE ECONOMIA EXTRANJERA

"EL Sistema de Precios Impuestos."

DESARROLLO ECONOMICO

Bert F. HOSELITZ: "Las teorías de las etapas del crecimiento económico."

RESEÑA DE LIBROS

REVISTA DE REVISTAS

Instituto de Estudios Políticos—Plaza de la Marina Española, 8
MADRID—13 (ESPAÑA)

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

INDUSTRIAL RELATIONS

A Journal of Economy & Society

Vol. 1

February 1962

No. 2

Symposium—WORK AND LEISURE IN MODERN SOCIETY

- Labor and Leisure: Intellectual Traditions *Harold L. Wilensky*
Work and Leisure in French Sociology ... *Joffre Dumazedier and Nicole Latouche*
The Sociology of Leisure: Some Suggestions *Bennett M. Berger*

Articles

- The Union Member's "Bill of Rights": First Two Years *Benjamin Aaron*
Bargaining Strategy and the Form of Contracts *Joseph W. Garbarino*
Trade Unions and Social Structure: II *Seymour Martin Lipset*

Criticism and Comment

- Management's "New Look" *Meyer Bernstein*
Rejoinder to Mr. Bernstein *Herbert R. Northrup*

Published three times a year. Single issues: \$1.25. One year: \$3.50.
Three years: \$8. Make checks payable to the Regents of the University
of California.

INSTITUTE OF INDUSTRIAL RELATIONS

University of California

Berkeley, California

REVUE DE SCIENCE FINANCIÈRE

No. 1—Janvier-Mars 1961

SOMMAIRE

- I—Impôts sur la Fortune et le Capital en Suisse par Henry LAUFENBURGER.
II—La pression fiscale dans les pays capitalistes et dans les pays socialistes par Warelski—
professeur d'Economie Politique à l'Université de Varsovie (Pologne).
III—L'aide financière aux collectivités locales par M. Lalumière—Professeur à la Faculté
de Droit et de Sciences Economiques de Bordeaux.
IV—La livre sterling et le Marché Commun par Soulié—Chargé de cours à la Faculté
de Droit et des Sciences Economiques de Montpellier.
V—Chronique du Crédit Public par Coulbois (Strasbourg)
VI—Chronique financière française par Fericelli (Rennes)
VII—Notes et Mémoires: Le projet de loi relatif à la redevance d'équipement par Cotta
(Caen)
VIII—Revue des Livres.
IX—Index bibliographique.

Revue trimestrielle. Abonnement annuel : Etranger : 45 NF français Le numéro : 11 NF, 50.

LIBRAIRIE GENERALE DE DROIT ET DE JURISPRUDENCE 20, rue Soufflot
Paris 5e

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

SCIENCE & SOCIETY

Established 1936

Vol. XXV, no. 4

December 1961

British Labor and American Slavery Royden Harrison
The Slave South Eugene D. Genovese
Books on Cuba Henry F. Mins
The Negro and the Civil War W. E. B. Du Bois

Book reviews by Samuel T. McSeveney on W. E. B. Du Bois; Margaret Shortreed on *Why the North Won the Civil War* and *The Crisis of the House Divided*; Herbert Aptheker on *The Crusade Against Slavery*; Harold D. Woodman on *Jacksonian Democracy in Mississippi*; John Tricamo on *The War for the Union*; Joseph Boskin on *American Suffrage*; Otto H. Olsen on *The African Colonization Movement*; Dirk J. Struik on *Chinese Science*; Herbert Biberman on *Theory of Film*; Howard Selsam on *History of Modern Culture*.

Quarterly, \$1.25 single copy \$5.00 per year, U.S. & Canada; \$5.50 foreign.

SCIENCE & SOCIETY, Inc., 30 East 20th Street, New York 3, New York

THE JOURNAL OF ECONOMIC BEHAVIOR

*Published by the Association for
Studies in Economic Behavior, Tokyo, Japan*

Vol. 1, No. 1

Contents

April, 1961

Editorial Note

The Social Adequacy Method of International Level of Living Comparisons as Applied to Japan and the United States Alan H. Gleason
Exports and Wages: The Case of Japan
Economic Research Section, Economic Bureau, Ministry of Foreign Affairs, Japan
Production Function and Scale Coefficients Shunsaku Nishikawa
An Analysis of Malthus' Population Theory Ryoshin Minami
A Comment Minoru Tachi
A Comment Tadao Yoshida
A Note on the Inconsistency of the Stability Condition in an Open Dynamic Leontief System Hiroshi Nida
A Note on the Pure Theory of Public Expenditure Keimei Kaizuka
Some Logical Properties of Arrowian Social Welfare Yasuoke Murakami
Report of the Monthly Meeting of the Association

The *Journal of Economic Behavior* is published biannually in April and October. The membership dues, including subscription to the *Journal of Economic Behavior* is \$2.80 or £ 1 per year. The price of a single copy is \$1.50 or 10 shillings. Membership dues, subscription and other communications should be forwarded to the business office of the Association for Studies in Economic Behavior.

Business Office: The Association for Studies in Economic Behavior, 9, 2-chome, Hatagaya, Shibuya-ku, Tokyo, Japan

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

INTERNATIONAL ECONOMIC REVIEW

Published by the Kansai Economic Federation with the Collaboration of the Wharton School of Finance and Commerce, University of Pennsylvania, and the Institute of Social and Economic Research, Osaka University

Chief Editor: L. R. Klein (University of Pennsylvania)

Co-Editor: M. Morishima (Osaka University)

Volume III

January 1962

Number 1

CONTENTS

Estimation in the Linear Decision Model	W. D. Fisher
Product Mix Alternatives; Flood Control, Electric power, and Irrigation ..	A. S. Manne
Concentration in United States Manufacturing Industry,	S. S. Sands
Experimental Analysis of a Duopoly Situation from the Standpoint of Mathematical Learning Theory	P. Suppes and J. M. Carlsmith
Balanced Growth and Intertemporal Efficiency in Capital Accumulation	H. Furuya and K. Inada
Allocating Indivisible Resources Affording External Economies or Diseconomies ..	S. Reiter and G. R. Sherman
On Equilibrium Growth of Capital and Labor	H. Neisser
Balanced Growth and a Constant Degree of Employment of Labour: Reply to Professor Neisser	Y. Shinkai

The Review is published fully in English, three times a year. The annual subscription price is \$4.00 per year outside Japan and 1,200 Yen per year in Japan; the price of a single copy is \$1.50 outside Japan, 500 Yen in Japan. Subscriptions outside of Japan should be forwarded to *The International Economic Review*, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia 4, Pa. Subscriptions in Japan should be forwarded to *The International Economic Review*, Kansai Economic Federation, Osaka Building, Soze-cho, Kita-Ku, Osaka, Japan.

Manuscripts for publication should be sent to the chief editor or co-editor of the Review.

MONDO APERTO

Rivista di Politica Economica Internazionale

Edited by Giuseppe Tucci

Problems of International Economic Policy and Foreign Marketing Studies

The review *Mondo Aperto* is published by Centro Italiano per lo Studio delle Relazioni Economiche Estere e dei Mercati, Rome (Italian Center for the Study of Foreign Economic Relationships and Marketings, Rome).

Founded in 1946. Published every two months.

Yearly subscription rate for foreign countries: \$10.00.

Single copies: \$2.00, post-free.

Address all communications and orders to: *Mondo Aperto* Via Rodolfo Lanciani n. 30, ROMA, Italy.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE ANNALS

of The American Academy of
Political and Social Science

A bi-monthly journal devoted to the discussion of political, economic and social problems. Presents a symposium on the development and effects of automation on American industry as the *March 1962* issue.

Automation

Edited by DR. CHARLES C. KILLINGSWORTH, Director
Labor and Industrial Relations Center
Michigan State University

- The Nature and Current State of the Art
- Impact of Automation
- Private and Public Policies

For full information write to :

3937 Chestnut Street
Philadelphia 4, Pennsylvania

Single Copies

Nonmembers	\$2.00
Members	\$1.50

THE JOURNAL OF INDUSTRIAL ECONOMICS

Board of Editors: P. W. S. Andrews (General Editor), Nuffield College, University of Oxford; Professor M. A. Adelman, Massachusetts Institute of Technology; Professor Joel Dean, Columbia University; Professor P. Sargant Florence, University of Birmingham; Professor R. B. Heflebower, Northwestern University; Professor E. S. Mason, Harvard University; Professor T. Wilson, O.B.E., University of Glasgow.

Volume X, No. 2, March, 1962

Louis Philips
P. H. Frankel
David Granick

P. C. Webb and
G. E. Wheeler
P. J. Donnelly and
Richard H. Holton
T. A. B. Corley

Charles F. Phillips, Jr.
Stanley E. Boyle

Common Markets: Towards a Theory of Market Integration.
The Significance of Marginal Capacity in the Oil Industry.
Functional Divisions of Company Management: A Reflection of
National 'Styles.'

'Operation Taurus': A Business Game Designed for the Building Industry.

A Note on Product Differentiation and Entertainment Expense Allowances in the United States.

How do Business Men Plan Production? A Case Study of the Radio and Television Industry 1951-60.

Government Promotion of Monopoly Power: A Comment.
Competition in the Synthetic Rubber Industry: A Comment.

This Anglo-American journal is essentially devoted to the economic problems of industry and commerce. Its contributors are business men, economists engaged in industry, and specialist academic industrial economists. The Journal is published three times a year. MSS from the United States should be sent to Professor Adelman at the Massachusetts Institute of Technology; and from other countries to the General Editor, Nuffield College, Oxford. The annual subscription is \$4.20 (30 shillings) post free; single copies \$1.90 (thirteen shillings and sixpence) post free. Remittances should be sent to the publisher by personal cheque.

Published by
BASIL BLACKWELL • OXFORD, ENGLAND

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

ECONOMIA INTERNAZIONALE

Quarterly Review

Vol. XIV, No. 4

CONTENTS

November 1961

- On Inflation and Economic DevelopmentS. Ghosh
 I criteri di investimento nei paesi sottosviluppati: in margine ad una recente
 polemicaA. Graziani
 The Theory of Interest in Centrally Planned EconomiesE. Neuberger
 Über Probleme der Nachfrageelastizitäten mit besonderer Berücksichtigung
 der Volkswirtschaftsplanung in sozialistischen LändernS. Varga
 La théorie de l'oligopole de BaumolA. Heertje
 Il paradosso di Leontief. Le ragioni di convenienza che informano la com-
 posizione del commercio estero statunitenseM. Toniolli
 Pakistan: A Case of an 'Export-Lagging' EconomyI. D. Pal

Bollettino Bibliografico ed Emerografico: Books Review—Titles of articles on recent
 periodicals—Summary of articles issued on recent periodicals.

Annual subscription to "Economia Internazionale" It. Liras 5.000. Applications for
 subscription and correspondence should be addressed to the Direzione Istituto di
 Economia Internazionale, via Garibaldi 4, Genova (Italy).

INTERNATIONAL SOCIAL SCIENCE JOURNAL



A quarterly review published by UNESCO, the United Nations Educational, Scientific and Cultural Organization.

Just issued: THE YUGOSLAV COMMUNE

Volume XIII, Number 3, 1961

- Part I:* THE COMMUNAL SELF-GOVERNMENT SYSTEM IN YUGOSLAVIA, by Jovan Djordjević, Chairman of the Legal Council and Federal Executive Council, Belgrade and Najdan Pašić, High School of Political Sciences, Belgrade.
 THE COMMUNAL ECONOMY, by Kiro Gligorov, Secretary in Charge of General Economic Affairs, Federal Executive Council, Belgrade.
 THE COMMUNE AND SOCIAL POLICY, by Branka Savić, Assistant Secretary in Charge of Social Policy, Federal Executive Council, Belgrade.
 THE ROLE OF THE COMMUNE IN EDUCATION AND CULTURE, by Milka Minić, President, Educational Council of the People's Federated Assembly, Belgrade.
 BASIC STATISTICS ON THE YUGOSLAV COMMUNES, by Miloš Macura, Deputy Director, Federal Statistical Office, Belgrade.
 REPORTS AND DOCUMENTS, covering the training of officials in administrative organs of the people's committees, The Permanent Conference of Yugoslav Cities, Statutes of the Commune of Kranj and selected bibliographical data.
Part II: *The World of the Social Sciences; Current Studies and Research Centers* (32 pages) *Reviews and Documents of Books* (34 pages) *News and Announcements* (24 pages).

Annual subscription \$6.50

THIS ISSUE—\$2.00

Order from: UNESCO PUBLICATIONS CENTER

801 Third Avenue, New York 22, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE ECONOMIC JOURNAL

The Quarterly Journal of the Royal Economic Society

No. 284

December 1961

Vol. LXXI

I. Articles

- The Variorum Edition of Alfred Marshall's *Principles of Economics*C. W. Guillebaud
The Reorganisation of the International Monetary System: An alternative proposal ...J. W. Angell
On the Measurement of Technological ChangeE. D. Domar
Long-run Implications of Alternative Fiscal Policies and the Burden of the National Debt
.....F. Modigliani
The Optimal Growth Path for an Underdeveloped EconomyR. M. Goodwin
A Method for Separating the Effects of Capital Accumulation and Shifts in Production Func-
tions upon Growth in Labour ProductivityL. Johansen

II. Reviews

III. Notes and Memoranda

IV. Recent Periodicals and New Books

MACMILLAN & Co. Ltd., LONDON, W.C.2.

Application for Fellowship to

ROYAL ECONOMIC SOCIETY, 21 Bentinck Street, London, W.1.

Annual Subscription £2.10.0 (or \$7.60)

Life Composition £34.10.0

Scottish Journal of Political Economy

(The Journal of the Scottish Economic Society)

Vol. VIII

NOVEMBER 1961

No. 3

- Some Recent Contributions to a Macro-Economic Theory of Income Distribution ..
.....K. W. Rothschild
John MillarA. L. Macfie
Property Speculators and the Building of Glasgow, 1788-1830J. R. Kellert
Economic Problems of a Multi-racial Society—The Fiji CaseA. T. Peacock
A Note on Regional Differences in Productivity, Profitability and Growth ..R. L. Smyth
A Note on Cost Inflation in the U.S.A.A. E. Holmans

The *Scottish Journal of Political Economy* is published in February, June, and October, and is free to members of the Scottish Economic Society. Applications for membership should be made to the Treasurer, Scottish Economic Society, 142 St. Vincent Street, Glasgow C.2., enclosing the annual subscription of £1:5:0. The *Journal* may also be obtained by non-members of the Society by ordering through any bookseller or direct from the publisher Oliver & Boyd, Tweeddale Court, Edinburgh, price 10/- per single copy.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

ECONOMICA

Published Quarterly

Vol. XXVIII

November 1961

No. 112

CONTENTS

Understanding International Trade	<i>Ely Devons</i>
A Simple Model of Employment, Money and Prices in a Growing Economy	<i>A. W. Phillips</i>
A Method of Consumer Demand Analysis Illustrated	<i>I. F. Pearce</i>
Monetary Management in Dependent Economies	<i>J. O. W. Olakanpo</i>
A Further Diagrammatic Illustration of Properties of the Keynesian Income Equilibrium	<i>L. R. Webb</i>
A Note on Compensation Tests	<i>George Slasor</i>
The Russian Loan of 1855: A Postscript	<i>Frank W. Fetter</i>
Comment	<i>Olive Anderson</i>
Interest Rates and Asset Prices	<i>Brian Tew</i>

MEMBERS OF THE AMERICAN ECONOMIC ASSOCIATION may subscribe at the specially reduced rate of 25s. (\$3.71) per annum. Subscriptions should be sent to the Secretary and Treasurer, American Economic Association, Evanston, Illinois, accompanied by a cheque drawn in favour of ECONOMICA, London School of Economics and Political Science.

JOURNAL OF BUSINESS

Graduate School of Business, University of Chicago, Chicago 37, Illinois

Volume XXXIV

October, 1961

Number 4

Index to Volume XXXIV

Dividend Policy, Growth, and the Valuation of Shares	<i>Merton H. Miller and Franco Modigliani</i>
The Future of Industrial Research	<i>Yale Brozen</i>
Capital Budgeting and the "Best" Tax Depreciation Method	<i>Sidney Davidson and David Drake</i>
Recent Labor Disputes over "Restrictive" Practices and "Inflationary" Wage Increases	<i>Irwin L. Herrnsstadt and Benson Soffer</i>
The Bayesian Approach to Statistical Decision: An Exposition	<i>Jack Hirsbleifer</i>
Indexes of Retail Prices of New Cars—Consumer Price Index	<i>Allen F. Jung</i>
A Note on Provisional Estimates of the Gross National Product and Its Major Components	<i>Peter E. de Janosi</i>
Book Reviews	<i>Books Received</i>
Notes: University Schools of Business	

The *Journal of Business* is published quarterly by the University of Chicago Press. Subscriptions are \$6.00 per year and should be addressed to the *Journal of Business*, Graduate School of Business, University of Chicago. Manuscripts in duplicate, typed and double-spaced (including footnotes and quotations), and editorial correspondence should be addressed to Irving Schweiger, Editor, *Journal of Business*, at the same address.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

LAND ECONOMICS

a quarterly journal of

PLANNING, HOUSING & PUBLIC UTILITIES

Among Articles Appearing in February 1962 issue:

The Concept of Human Progress: Bridge to the Future	Van R. Potter
(Centennial Address, Founding of Land Grant Colleges)	
Housing in a Growth Economy	Donald A. Fergusson and Raymond F. Valenti
The Public Utility Scissors and Economic Policy	Warren S. Gramm
Coal Mining and Changing Land Patterns in Oklahoma	Arthur H. Doerr
Rates of Return to Improvement Practices on Private and Public Ranges	B. Delworth Gardner
Housing Space Demands: A Cross Section Analysis	Alan R. Winger
Agricultural Taxation and India's Third Five-Year Plan	
.....	Harold M. Groves and Murngappa Madhavan

• Annual Subscription \$6.00

Single Copy \$2.00

Sterling Hall, University of Wisconsin

Madison 6, Wisconsin

INTERNATIONAL ECONOMIC PAPERS

No. 10, 1960

Translations prepared for the International Economic Association

CONTENTS

Preface

Tax Principles and Tax Policy	
<i>Ekonomi Politik Sambälle</i> , 1959	Erik Lindahl
Price Stability, Economic Growth and Income Distribution	
<i>Schweizerische Zeitschrift für Volkswirtschaft und Statistik</i> , 1959	Gottfried Bombach
International Inequalities and General Criteria for Development Aid	
<i>De Economist</i> , 1953	H. Theil
Note on the Cost of Railway Transport	
<i>Annales des Ponts et Chaussées</i> , 1886	W. Nordling
Marginal Utility	
<i>Handwörterbuch der Staatswissenschaften</i> , 1927	Paul Rosenstein-Rodan
Inflation in Chile: An Unorthodox Approach	
<i>El Trimestre Económico</i> , 1958	Osvaldo Sunkel
The Stockholm School versus the Quantity Theory	
<i>Ekonomisk Tidskrift</i> , 1943	Bertil Ohlin
The Role of Amortization in Investment Programming	
<i>Revue de Recherche Opérationnelle</i> , 1957	Maurice Boiteux
Some Problems of Price Formation in a Socialist Economy	
<i>Voprosy Ekonomiki</i> , 1957	Y. Malishev
Frederik Zeuthen	
<i>Nationalökonomisk Tidskrift</i> , 1959	Hans Bremi
Classified Index of I.E.P., Volumes 1-10	

London
Macmillan & Co. Ltd.

New York
The Macmillan Company

A special price of \$3.80 net, plus 12 cents postage, has been arranged in co-operation with The Macmillan Company for members of the American Economic Association. Purchases at the special rate may be made by placing an order with Dr. James Washington Bell, Secretary, American Economic Association, Northwestern University. A covering check, made out to The Macmillan Company, must accompany the order.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

AGRICULTURAL HISTORY

Designed as a medium for the publication of research and documents pertaining to the history of agriculture in all its phases and as a clearing house for information of interest and value to workers in the field. Materials on the history of agriculture in all countries are included and also materials on institutions, organizations, and sciences which have been factors in agricultural development.

ISSUED QUARTERLY SINCE 1927

BY

THE AGRICULTURAL HISTORY SOCIETY

Subscriptions, including membership: Annual, \$5.00; student, \$2.00; contributing, \$10.00.

Editor: Fred W. Kohlmeyer, 3 Commerce Annex, University of Illinois, Urbana, Illinois.

Secretary-Treasurer: Wayne D. Rasmussen, Room 3446, South Agriculture Building, U. S. Economic Research Service, Washington, D.C.

INTERNATIONAL STUDIES

*Quarterly Journal of the Indian School of International Studies,
New Delhi*

International Studies contains articles in the fields of modern International Politics, Economics, and Law as well as on political, economic and social developments in Asia and other areas.

Vol. III

No. 2 (October 1961)

CONTENTS

West New Guinea: An Australian View	Norman Harper
The New Rouble and the Underdeveloped Countries	J. D. Sethi
Presidential System in the Republic of Viet-Nam	K. R. Bombwall
Alignment and Non-Alignment in Pakistan's Foreign Policy	B. O. Rastogi

Notes and Memoranda : Survey of Source Material : Bibliography

Annual Subscription: Rs.22: s.40: \$6.60

Single Copy: Rs. 6: s.11: \$1.80

Copies may be obtained from the publishers, Asia Publishing House, at the following addresses:

ASIA PUBLISHING HOUSE

447 Strand
London W.C.2

Nicol Road
Bombay 1

119 West 57th Street
New York 1, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

PUBLIC FINANCE/FINANCES PUBLIQUES

International Quarterly Journal founded by J. A. Monod de Froideville
Publisher/Editeur

Foundation Journal Public Finance/Fondation Revue Finances Publiques
(Stichting Tijdschrift voor Openbare Financiën)

Vol. XVI

1961

No. 2

Allan Williams

Fiscal Policy and Interregional Resource Allocation

Stanley S. Surrey &
Oliver Oldman

Report of a Preliminary Survey of the Tax System
of Argentina

Sei Fujita

Political Ceiling on Income Taxation

Notes and Discussions/Notes et discussions

Paul Davidson

Wells on Excise Tax Incidence in an Imperfectly
Competitive Economy

Paul Wells

A Reply

M. Kenan Bulutoglu

Note sur les origines du théorème de la pression
fiscale différentielle de l'impôt indirect: la con-
tribution de C. Colson

Book Reviews/Comptes Rendus

New Publications/Publications nouvelles

- Contributions in French or German are followed
by an English summary.

Committee of Directors: M. Masoin, Alan T. Peacock, B. Schendatok, P. Senf

Correspondence should be addressed to Prof. Dr. P. Senf, Universität des Saarlandes, Saarbrücken 15,
Germany. Orders may be placed with the representative in the United States, Stechert Hafner Inc., 31
East 10th Street, New York, or directly with the Administration, 150 Riouwstraat, The Hague, Nether-
lands. Subscription rate for 1 year: \$10.90.

RIVISTA INTERNAZIONALE DI SCIENZE ECONOMICHE E COMMERCIALI

Anno VIII

Maggio 1961

N. 5

Table of Contents

HENRY LAUFENBURGER: Réflexions sur l'imposition des sociétés anonymes. Etude comparée.

HERBERT J. ROSENSTERN: Il mercato del cambio estero dopo la rivalutazione del marco tedesco.

SERGIO RICOSSA: Sui requisiti di una buona contabilità economica nazionale.

ANDREW M. SCOTT: Il presente in prospettiva: Le ideologie politiche negli Stati Uniti.

EUGENIO PAOLANTONIO: I problemi della viabilità alpina nel quadro dei traffici europei.

LUIGI CESERANI: Le valutazioni dell'Ufficio del Registro in sede di tassazione dell'atto di trasferimento.

Giurisprudenza commerciale:

CARLO ALBERTO FACCHINO: Imposta di registro sulla revocatoria fallimentare.

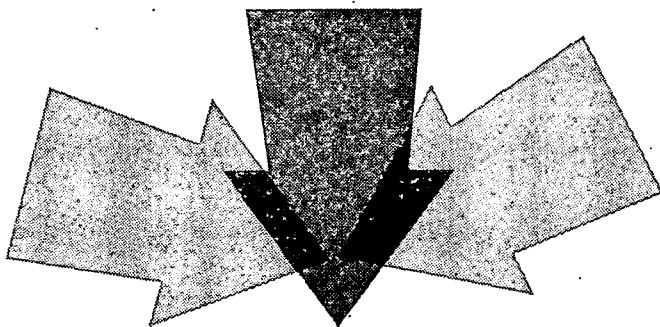
Book Reviews

Summaries-Zusammenfassungen

Extensive summaries of each article in English and German and occasionally articles completely presented in English and French.

Monthly publication; under the auspices of Bocconi University, Milan. Editorial Office:
Via P. Teuliè 1, Milano (Italy). Yearly Subscription: Italian Lire 4,500; Abroad, Lire
6,000, postage included. Back issues (1954-60), Lire 30,000. Cloth-bound (11 vols.)
Lire 36,000.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



3 MACMILLAN TEXTS COVER KEY AREAS OF MODERN ECONOMICS

MACROECONOMIC THEORY

By Gardner Ackley, University of Michigan

Professor Ackley's well-organized text offers a rigorous, detailed treatment of Keynesian and post-Keynesian macroeconomics, emphasizing their continuity with classical theories. There are full discussions of modern inflation theory; the growth models of Domar, Harrod, and Duesenberry; the dynamics of short-run movements and long-term growth; and the relevance of theory to policy.

1961, 597 pp., \$8.50

LABOR ECONOMICS AND INSTITUTIONS

By Arthur D. Butler, University of Buffalo

This up-to-date text analyzes unions and the labor force, collective bargaining, wages, unemployment and economic insecurity, and recent trends. All major labor legislation through the Landrum-Griffin Act is carefully evaluated. "A solid text for an introductory labor economics course. It is well-ordered, maintains interest without sacrificing analysis, and within a reasonable length it covers the material that most beginning labor courses are made of."—Earl F. Cheit, University of California (Berkeley), in *The American Economic Review*

1961, 595 pp., \$6.50

THE ECONOMICS OF PUBLIC FINANCE, Third Edition

By Philip E. Taylor, University of Connecticut

The latest edition of this authoritative text provides students with a thorough, working knowledge of the foundations and analytic techniques of public finance. It includes new material on fiscal measures to control inflation, fiscal policy for economic growth, strengthening the federal personal income tax, and the fiscal problems of state and local governments.

1961, 588 pp., \$7.50

For further information on one or more of these recently published texts, please write:

THE MACMILLAN COMPANY, 60 Fifth Avenue, New York 11, N. Y.

A Division of The Crowell-Collier Publishing Company

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

*The College Department
Of Rand McNally Announces*

**MONEY, BANKING,
AND PUBLIC POLICY**

by **HAROLD BARGER** • *Columbia University*

Carefully organized and well-written, this text treats fully all topics necessary for a firm foundation in understanding contemporary banking. The author's fresh approach includes such timely and important additions as discussion of banking in other countries and the monetary aspects of the business cycle. His classroom experience offers the student a more balanced, integrated and thought-provoking treatment of theory, description, and policy than any previous text.

FOUR OUTSTANDING FEATURES OF THIS NEW TEXT ARE:

1. A lucid description of bank and nonbank financial institutions, of the way they operate, and of policy problems connected with their regulation.
2. A compact, yet up-to-date and well-balanced account of monetary and fiscal theory. This account proceeds step by step with ample arithmetical and graphical illustrations, free from frills, and gives the student the basic understanding he needs for the discussion of policy problems.
3. A systematic discussion of the major policy issues of our time in a relevant historical setting. The potentialities of monetary and fiscal policy are appraised in relation to growth, unemployment, inflation and the gold problem.
4. A comprehensive treatment of contemporary banking with less emphasis on the extraneous details of banking history which plague the ordinary text.

1962 • 6 x 9 inches • 711 pages • \$7.00 list

Instructor's Manual available



for approval copies write:
College Department

RAND McNALLY & COMPANY
P.O. Box 7600, Chicago 80, Illinois

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Announcing

HARRIS—FOURTH EDITION

THE AMERICAN ECONOMY

Principles, Practices, and Policies

By C. LOWELL HARRIS, Professor of Economics, Columbia University

The new Fourth Edition of this popular best text for the introductory course has been brought up to date and improved in many ways. As in earlier editions, it remains noteworthy for its rich and vital writing style, its high degree of professional competence in handling economic content, and its skillful blend of description, analysis, and theory. Again, it has been printed in two colors to increase the attractiveness of the format and to aid students in getting the most out of the charts and diagrams. A comprehensive Teacher's Manual will be available to adopters.

Davidson, Smith, and Wiley—REVISED EDITION

ECONOMICS

An Analytical Approach

By RALPH KIRBY DAVIDSON, VERNON L. SMITH, and JAY W. WILEY
all of Purdue University

This rigorous introduction to economic analysis provides the student with an analytical framework he can use both in understanding the operation of our economic system and in analyzing and making decisions at the individual firm level. It is especially useful for engineering, science, and mathematics students since it utilizes the mathematical training these students receive. The new Revised Edition has been brought up to date and improved in the light of classroom experience.



WRITE FOR EXAMINATION COPIES

RICHARD D. IRWIN, INC.

HOMewood, ILLINOIS

Please mention THE AMERICAN ECONOMIC REVIEW when writing to advertisers.

3-5750-1

THE AMERICAN ECONOMIC REVIEW

VOLUME 52

June 1962

NUMBER 2

ARTICLES

Monetary Theory and Policy *H. G. Johnson*

Czechoslovak Industrial Growth, 1948-1959 *C. F. Prater*

— Inflation of the Economy with Development
and Trade Problems *E. P. Rathbone*

New Concepts Concerning Futures Markets *Forbush W. McKinn*

Seasonal Unemployment and Insurance *James O'Connor*

REVIEW ARTICLES

Money and Credit *Leone Lurshitz*

The Theory of Capital *M. H. Smith*

COMMUNICATIONS

Economic Forecasting When the Subject of the
Forecast Is Influenced by the Forecaster *H. C. Rapp*

The Revised Index of Industrial Production
Reply *Viktor Perlo*
Lawson Lohman

The Bathsheba-Youngstown Case: Comment
Reply *D. H. Martin*
E. S. Kemp

The Journal of
THE AMERICAN ECONOMIC ASSOCIATION

THE AMERICAN ECONOMIC ASSOCIATION

Founded in 1885

OFFICERS

President

EDWARD S. MASON, Harvard University

President-elect

GOTTFRID HABERLER, Harvard University

Vice Presidents

ALBERT G. HART, Columbia University

RICHARD A. MUSCHAY, Princeton University

Secretary-Treasurer and Editor of Proceedings

HAROLD T. WILLIAMSON, Northwestern University

Managing Editor of the American Economic Review

BERNARD F. HAYEK, Stanford University

EXECUTIVE COMMITTEE

Elected Members of the Executive Committee

J. KENNETH CALDWELL, Harvard University

RALPH A. YOUNG, Board of Governors, Federal Reserve System

EWAN CLACK, U. S. Department of Labor

CHARLES P. KINDERHOPF, Massachusetts Institute of Technology

ROBERT LORRIN, Yale University

W. ARTHUR WALLIS, University of Chicago

Ex Officio Members

THEODORE W. SCHULTZ, University of Chicago

PAUL A. SAMUELSON, Massachusetts Institute of Technology

Publication and business office at Curtis Road Plaza, Menasha, Wisconsin.

THE AMERICAN ECONOMIC REVIEW, including four quarterly numbers, the *Proceedings* of the annual meetings, the *Directory* and supplements, is published by the American Economic Association and is sent to all members five times a year, in March, May, June, September and December.

Membership dues of the Association are \$6.00 a year, 75.00 of each year's dues being in payment of a year's subscription. Subscriptions to the Review by nonmembers are \$6.00 a year. Single copies, \$1.50.

Correspondence relating to the *Papers and Proceedings*, the *Directory*, advertising, permission to quote, business matters, subscriptions, membership and changes of address may be sent to the secretary, Harold T. Williamson, Northwestern University, Evanston, Illinois. To be effective, notice of change of address must reach the secretary by the 15th of the month previous to the month of publication.

Second-class postage paid at Menasha, Wisconsin. Printed in U.S.A.

*The College Department
Of Rand McNally Announces*

**MONEY, BANKING,
AND PUBLIC POLICY**

by **HAROLD BARGER** • *Columbia University*

Carefully organized and well-written, this text treats fully all topics necessary for a firm foundation in understanding contemporary banking. The author's fresh approach includes such timely and important additions as discussion of banking in other countries and the monetary aspects of the business cycle. His classroom experience offers the student a more balanced, integrated and thought-provoking treatment of theory, description, and policy than any previous text.

FOUR OUTSTANDING FEATURES OF THIS NEW TEXT ARE:

1. A lucid description of bank and nonbank financial institutions, of the way they operate, and of policy problems connected with their regulation.
2. A compact, yet up-to-date and well-balanced account of monetary and fiscal theory. This account proceeds step by step with ample arithmetical and graphical illustrations, free from frills, and gives the student the basic understanding he needs for the discussion of policy problems.
3. A systematic discussion of the major policy issues of our time in a relevant historical setting. The potentialities of monetary and fiscal policy are appraised in relation to growth, unemployment, inflation and the gold problem.
4. A comprehensive treatment of contemporary banking with less emphasis on the extraneous details of banking history which plague the ordinary text.

1962 • 6 x 9 inches • 714 pages • \$7.00 list

Instructor's Manual available



for approval copies write:
College Department

RAND McNALLY & COMPANY
P.O. Box 7600, Chicago 80, Illinois

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Announcing

Harriss—FOURTH EDITION

THE AMERICAN ECONOMY

Principles, Practices, and Policies

By C. LOWELL HARRISS, Professor of Economics, Columbia University

The new Fourth Edition of this popular basic text for the introductory course has been brought up to date and improved in many ways. As in earlier editions, it remains noteworthy for its rich and vital writing style, its high degree of professional competence in handling economic content, and its skillful blend of description, analysis, and theory. Again, it has been printed in two colors to increase the attractiveness of the format and to aid students in getting the most out of the charts and diagrams. A comprehensive Teacher's Manual will be available to adopters.

Davidson, Smith, and Wiley—REVISED EDITION

ECONOMICS

An Analytical Approach

By RALPH KIRBY DAVIDSON, VERNON L. SMITH, and JAY W. WILEY
all of Purdue University

This rigorous introduction to economic analysis provides the student with an analytical framework he can use both in understanding the operation of our economic system and in analyzing and making decisions at the individual firm level. It is especially useful for engineering, science, and mathematics students since it utilizes the mathematical training these students receive. The new Revised Edition has been brought up to date and improved in the light of classroom experience.



WRITE FOR EXAMINATION COPIES

RICHARD D. IRWIN, INC.

HOMEWOOD, ILLINOIS

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

30 MAY 1962

THE AMERICAN ECONOMIC REVIEW

VOLUME LII

June 1962

NUMBER 3

ARTICLES

Monetary Theory and Policy

H. G. Johnson

Czechoslovak Industrial Growth: 1948-1959

G. J. Staller

Simulation of an Economy with Development
and Trade Problems

E. P. Holland

New Concepts Concerning Futures Markets

Holbrook Working

Seasonal Unemployment and Insurance

James O'Connor

REVIEW ARTICLES

Money and Credit

Lorie Tarshis

The Theory of Capital

V. L. Smith

COMMUNICATIONS

Economic Forecasting When the Subject of the
Forecast Is Influenced by the Forecast

M. C. Kemp

The Revised Index of Industrial Production

Victor Perlo

Reply

Clayton Gehman

The Bethlehem-Youngstown Case: Comment

D. D. Martin

Reply

L. S. Keyes

The Journal of
THE AMERICAN ECONOMIC ASSOCIATION

THE AMERICAN ECONOMIC ASSOCIATION

Founded in 1885

OFFICERS

President

EDWARD S. MASON, Harvard University

President-elect

GOTTFRIED HABERLER, Harvard University

Vice-Presidents

ALBERT G. HART, Columbia University

RICHARD A. MUSGRAVE, Princeton University

Secretary-Treasurer and Editor of Proceedings

HAROLD F. WILLIAMSON, Northwestern University

Managing Editor of the American Economic Review

BERNARD F. HALEY, Stanford University

EXECUTIVE COMMITTEE

Elected Members of the Executive Committee

J. KENNETH GALBRAITH, Harvard University

RALPH A. YOUNG, Board of Governors, Federal Reserve System

EWAN CLAGUE, U. S. Department of Labor

CHARLES P. KINDLEBERGER, Massachusetts Institute of Technology

ROBERT TRIFFIN, Yale University

W. ALLEN WALLIS, University of Chicago

Ex-Officio Members

THEODORE W. SCHULTZ, University of Chicago

PAUL A. SAMUELSON, Massachusetts Institute of Technology

Publication and business office at Curtis Reed Plaza, Menasha, Wisconsin.

THE AMERICAN ECONOMIC REVIEW, including four quarterly numbers, the *Proceedings* of the annual meetings, the *Directory* and supplements, is published by the American Economic Association and is sent to all members five times a year, in March, May, June, September and December.

Membership dues of the Association are \$6.00 a year, \$5.00 of each year's dues being in payment of a year's subscription. Subscriptions to the REVIEW by nonmembers are \$6.00 a year. Single copies, \$1.50.

Correspondence relating to the *Papers and Proceedings*, the *Directory*, advertising, permission to quote, business matters, subscriptions, membership and changes of address may be sent to the secretary, Harold F. Williamson, Northwestern University, Evanston, Illinois. To be effective, notice of change of address must reach the secretary by the 15th of the month previous to the month of publication.

Second-class postage paid at Menasha, Wisconsin. Printed in U.S.A.

THE AMERICAN ECONOMIC REVIEW

BERNARD F. HALEY, Managing Editor

DORIS MERRIAM, Assistant

BOARD OF EDITORS

Martin Bronfenbrenner

Albert O. Hirschman

Alfred E. Kahn

Roland N. McKean

Joseph A. Pechman

Melvin W. Reder

Tibor Scitovsky

Robert Solow

Volume LII

JUNE 1962

Number 3

ARTICLES

Monetary Theory and Policy	<i>H. G. Johnson</i>	335
Czechoslovak Industrial Growth: 1948-1959	<i>G. J. Staller</i>	385
Simulation of an Economy with Development and Trade Problems	<i>E. P. Holland</i>	408
New Concepts Concerning Futures Markets and Prices	<i>Holbrook Working</i>	431
Seasonal Unemployment and Unemployment Insurance	<i>James O'Connor</i>	460

REVIEW ARTICLES

Money and Credit	<i>Lorie Tarshis</i>	472
The Theory of Capital	<i>V. L. Smith</i>	481

COMMUNICATIONS

Economic Forecasting When the Subject of the Forecast Is Influenced by the Forecast	<i>M. C. Kemp</i>	492
The Revised Index of Industrial Production Reply	<i>Victor Perlo</i> <i>Clayton Gehman</i>	496 513
The Bethlehem-Youngstown Case and the Market-Share Criterion: Comment Reply	<i>D. D. Martin</i> <i>L. S. Keyes</i>	522 528

BOOK REVIEWS

ÅKERMAN, Theory of Industrialism: Causal Analysis and Economic Plans, by H. H. Villard	530
ARNDT, editor, Die Konzentration in der Wirtschaft, by J. R. Houssiaux	638
BALASSA, The Theory of Economic Integration, by J. C. Ingram	612

Manuscripts and editorial correspondence relating to the regular quarterly issues of this REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California. *Style Instructions* for guidance in preparing manuscripts in acceptable form will be provided upon request to the editor.

No responsibility for the views expressed by authors in this REVIEW is assumed by the editors or the publisher, The American Economic Association.

Copyright American Economic Association 1962

BERGSON, The Real National Income of Soviet Russia since 1928, by A. Nove	559
BEVERIDGE, The London School of Economics and Its Problems, 1919-1937, by F. H. Kirkpatrick	645
BROVEDANI, Bases analíticas de la política monetaria, by V. Salera	601
BRUS, Ogolne problemy funkcionowania gospodarki socjalistycznej (General Problems of the Functioning of the Socialist Economy), by A. Korbonski	591
CAMERON, France and the Economic Development of Europe, 1800-1914: Conquests of Peace and Seeds of War, by D. S. Landes	563
CHAMBERS, Economic Fluctuations and Forecasting, by H. B. Ernst	595
COBELJIĆ, Politika i metodi privrednog razvoja Jugoslavije, by P. J. Meier	574
COOKE, The Role of Debt in the Economy, by M. A. Robinson	604
COSTANZO, Programas de estabilización económica en América Latina, by R. R. Edminster	584
DAVIS, HUGHES AND MCDUGALL, American Economic History: The Development of a National Economy, by J. W. Chisholm	583
DEAR AND LYDALL, The Role of Small Enterprises in Indian Economic Development, by G. Rosen	577
DONALDSON, Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity, by R. W. Mayer	628
DUCHINI, Il profitto nella teoria economica contemporanea, by A. S. Hall	546
EICHER, Consommation et épargne, by M. Cohen	556
ELLIS, WITH WALLICH, editors, Economic Development for Latin America, by A. Karasz	571
ERMAKOV, editor, Ekonomicheskie zakony sotsialisma i ikh ispol'zovanie (Economic Laws of Socialism and their Utilization), by G. Grossman	547
FELLNER, GILBERT, HANSEN, AND OTHERS, The Problem of Rising Prices, by A. Smithies	535
FRANK, The European Common Market—An Analysis of Commercial Policy, by P. W. Bell	614
FRIEND AND JONES, editors, Proceedings of the Conference on Consumption and Saving, by R. Stone	538
FROEHLICH, editor, Land Tenure, Industrialization, and Social Stability: Experiences and Prospects in Asia, by H. T. Patrick	579
GANGEMI, Finanza pubblica, by K. Holbik	606
GOODMAN, Industrial Materials in Canadian American Relations, by D. W. Slater ..	625
HANSEN, Foreign Trade Credits and Exchange Reserves, C. P. Kindleberger	608
HARRIS, editor, The Dollar in Crisis, by H. K. Zassenhaus	615
HATANAKA, The Workability of Input-Output Analysis, by A. Gosfield	553
HEERTJE, De prijsvorming van consumptiegoederen op oligopolistische markten, by E. Thorbecke	550
HOLMANS, United States Fiscal Policy 1945-1959: Its Contribution to Economic Stability, by P. B. Trescott	605
JANSSEN, Free Trade, Protection and Customs Union, by R. A. Mundell	621
KLAMAN, The Postwar Residential Mortgage Market, by H. S. Schwartz	597
LINDER, An Essay on Trade and Transformation, by F. Gehrels	622
LUTZ AND HAGUE, editors, The Theory of Capital, by V. L. Smith (review article) ..	481
MACURA, Stanovništvo kao činilac privrednog razvoja Jugoslavije, by P. J. Meier ...	574
MALANOS, Intermediate Economic Theory, by R. E. Slesinger	557
MARRAMA, Ciclo economico e politica anti-ciclica, by B. Foa	544
MCCLELLAND, The Achieving Society, by G. Katona	580
NEMCHINOV, editor, Primenenie matematiki v ekonomicheskikh issledovaniyakh (Application of Mathematics in Economic Investigations), by C. Almon	587
NICOLAÏ, Comportement économique et structures sociales, by D. Vikor	533
OLIVER, The Control of Hire-Purchase, by E. Miller	599
PAPI, Economia internazionale, by N. M. Petruzzelli	619
PASCHKE, Bestimmungsgründe des persönlichen Sparens—Ein Beitrag zur ökonomischen Verhaltensforschung, by H. Brems	549
PEACOCK AND WISEMAN, The Growth of Public Expenditure in the United Kingdom, by F. H. Jackson	602

PECK, Competition in the Aluminum Industry: 1945-1958, by D. Dewey	630
PERROUX, L'économie du XXIème siècle, by B. Balassa	531
PIATIER, Statistique et observation économique, by G. Tintner	586
REBOUD, Systèmes fiscaux et Marché Commun, by K. W. Roskamp	626
RICHMOND, Regulation and Competition in Air Transportation, by A. J. Gellman ...	635
SLICHTER, Economic Growth in the United States: Its History, Problems, and Pros- pects, by M. Bronfenbrenner	568
SMITH, Investment and Production: A Study in the Theory of the Capital-Using Enterprise, by J. Hirshleifer	540
SPENCER, Clark and Hogue, Business and Economic Forecasting, by J. W. Hooper ..	594
SPENGLER, editor, Natural Resources and Economic Growth, by S. G. Winter, Jr. ..	639
STREETEN, Economic Integration: Aspects and Problems, by I. S. Friedman	610
VINSKI, Procjena nacionalnog bogatstva po područjima Jugoslavije (Estimate of Na- tional Wealth of Yugoslavia by Areas), by J. Tomasevich	589
WEBER, editor, The Structure of Collective Bargaining, by J. E. Maher	641
YAMADA, Theory and Application of Interindustry Analysis, by G. Ranis	542
Cartel and Monopoly in Modern Law, by R. C. Bernhard	631
Money and Credit, The Report of the CED Commission on Money and Credit, by L. Tarshis (review article)	472
Wagakuni chingin-kōzō no shiteki kōsatsu (A Historical Study of Japanese Wage Structure), by K. Taira	643

OTHER DEPARTMENTS

Titles of New Books	647
Periodicals	664
Notes	677

JAMES WASHINGTON BELL

Secretary-Treasurer of the American Economic Association
1936-61



James Washington Bree

The American Economic Review

VOLUME LII

JUNE 1962

NUMBER THREE

MONETARY THEORY AND POLICY

By HARRY G. JOHNSON*

In order to isolate a field of study clearly enough demarcated to be usefully surveyed, it is necessary to define monetary theory as comprising theories concerning the influence of the quantity of money in the economic system, and monetary policy as policy employing the central bank's control of the supply of money as an instrument for achieving the objectives of general economic policy. In surveying the field thus narrowly defined fourteen years ago, Henry Villard [123] began by remarking on the relative decline in the significance attached to it as compared with the offshoot fields of business cycle and fiscal (income and employment) theory, a decline related to the experience of the 1930's, the intellectual impact of Keynes' *General Theory* [66], and the inhibiting effects of the wartime expansion of public debt on monetary policy. While this division of labor has continued, and has indeed been accentuated by the emergence of the cross-cutting field of economic growth and development as an area of specialization, the field of money has been increasingly active and has received increasing attention in the past fourteen years.

This recent activity in the money field can be explained in part by the general logic of scientific progress, according to which disputed issues are investigated with the aid of more powerful theoretical tools, and the implications of new approaches are explored in rigorous detail. Thus, in monetary theory, the issues raised by Keynes' attack on "classical" monetary theory have been worked over with the apparatus of general equilibrium analysis developed by J. R. Hicks [60] (to the gradual eclipse of the Robertsonian and Swedish period analysis once considered most promising), and Keynes' emphasis on treating money as an asset has been followed by subsequent theorists as a means of bringing money within the general framework of the

*The author is professor of economics at the University of Chicago. He is indebted to the University of Chicago Workshop in Money and Banking for discussions helpful in improving the presentation of the argument. [This is the fifth in a series of survey articles for which the Rockefeller Foundation has provided support.—*Editor.*]

theory of choice. In larger part, the revival of interest in money is a reflection of external developments—the postwar inflation, the consequent revival of monetary policy, and the persistence of inflation in the face of unemployment—together with recognition of the problems posed for both policy and theory by certain institutional characteristics of the modern economy (notably the widespread holding of liquid assets) and by potential conflicts between the diverse policy objectives now accepted as responsibilities of governmental policy.

The interest of professional economists in these matters has also been directly enlisted in the preparation of testimony and studies for a succession of large-scale enquiries into monetary policy and institutions, most recently the Radcliffe Report in Britain [127] and the Report [128] of the Commission on Money and Credit established by the Committee for Economic Development in the United States.¹ Finally, recent work on both theory and policy has been strongly influenced by the increased postwar emphasis on (and capacity for) econometric model-building and testing, and stimulated by the availability of new data—especially Raymond Goldsmith's data on saving [47] and financial intermediaries [48] in the United States, the Federal Reserve System's flow-of-funds accounts ([126] and subsequent publications), and Milton Friedman and Anna Schwartz' historical series of the United States money supply, forthcoming in [42].

While the impact of Keynes' *General Theory* has been so great that most of recent theory and research on money can be classified either as application and extension of Keynesian ideas or as counterrevolutionary attack on them, it seems preferable in a survey of the field to organize the material according to the main areas of research rather than according to the issues Keynes raised. Readers interested in the present status of Keynes' contributions to economics are referred to anniversary assessments by William Fellner and Dudley Dillard [32], James Schlesinger [102], H. G. Johnson [61], and R. E. Kuenne [71]. This survey deals with four broad topics: the neutrality of money; the theory of demand for money, which becomes the theory of velocity of circulation when the demand for money is related to income; the theory of money supply, monetary control, and monetary dynamics; and monetary policy. The theory of interest has been surveyed in a companion article by G. L. S. Shackle [105], and the theory of inflation is to be surveyed in a subsequent article in this *Review* by Martin Bronfenbrenner and Franklyn Holzman.

¹ For a list of Congressional documents bearing on monetary policy, see Friedman [34, pp. 103-40]; to Friedman's list should be added the *Staff Report on Employment, Growth and Price Levels* [129] and the accompanying *Staff Studies*.

I. *The Classical Dichotomy and the Neutrality of Money*

From the standpoint of pure theory, the most fundamental issue raised by Keynes in the *General Theory* lay in his attack on the traditional separation of monetary and value theory, the "classical dichotomy" as (following Don Patinkin [94]) it has come to be called, according to which relative prices are determined by the "real" forces of demand and supply and the absolute price level is determined by the quantity of money and its velocity of circulation. Keynes' attack has been followed by a protracted, often confused, and usually intensely mathematical investigation of the "consistency" or "validity" of the classical dichotomy, the requirements of a consistent theory of value in a monetary economy, and the conditions under which money will or will not be "neutral" (in the sense that a change in the quantity of money will not alter the real equilibrium of the system—relative prices and the interest rate). In the course of the controversy at least as much has been learned about the difficulty of extracting theoretical conclusions from systems of equations as has been contributed to usable monetary theory. The argument, it should be noted, has been concerned throughout with a monetary economy characterized by minimal uncertainty, whereas Keynes was concerned with a highly uncertain world in which money provides a major link between present and future (on this point see Shackle [105, p. 211]).

A. *The Integration of Monetary and Value Theory*

The early history of what is often described as "the Patinkin controversy" is not worth recounting in detail; an annotated bibliography of it may be found in Valavanis [122], and Patinkin's own summary in [90]. It began with Oskar Lange's argument [72] that Say's Law (which in this context is the principle that people sell goods only for the purpose of buying goods) logically precludes any monetary theory, since in combination with Walras' Law (that the total supply of goods and money to the market must be equal to the total demand for goods and money from the market) it implies that the excess demand for money on the market is identically zero regardless of the absolute price level, which therefore is indeterminate. Patinkin took up this charge, shifting the object of criticism to the classical assumption that the demand and supply functions for commodities are homogeneous of degree zero in commodity prices (that is, a doubling of all commodity prices will leave quantities demanded and supplied unchanged—in other words, quantities demanded depend only on relative prices). This criticism was refined and its mathematical formulation clarified in response to subsequent critical contributions, of which the most

important was Karl Brunner's demonstration [17] that a consistent monetary theory could be constructed without assigning utility to money.

In its final form at this stage [90], Patinkin's criticism of the classical dichotomy was that there was a logical contradiction between classical value theory, in which demands and supplies of commodities depended only on relative prices and not on the real value of people's cash balances, and the quantity theory of money, in which the dependence of spending on the real value of money balances provides the mechanism by which the quantity of money determines a stable equilibrium absolute price level, a contradiction which could be removed neither by resort to Say's Law nor by abandonment of the quantity theory in favor of some other monetary theory. But, Patinkin argued, the contradiction could be removed, and classical theory reconstituted, by making the demand and supply functions depend on real cash balances as well as relative prices; while this would eliminate the dichotomy, it would preserve the basic features of classical monetary theory, and particularly the invariance of the real equilibrium of the economy (relative prices and the rate of interest) with respect to changes in the quantity of money.

The integration of monetary and value theory through the explicit introduction of real balances as a determinant of behavior, and the reconstitution of classical monetary theory, is the main theme and contribution of Patinkin's monumentally scholarly work, *Money, Interest, and Prices* [93]. The first part of the book ("Microeconomics") develops the theory of the real balance effect (the effect of a change in the price level on the real value of money balances and hence on expenditure) in terms of a Hicksian exchange economy in which the individual starts each week with an endowment of commodities that must be consumed within the week and a stock of fiat money, and plans to exchange these for commodities to be consumed during the week and cash balances with which to start the next week. The demand for cash balances is a demand for real balances, derived rather artificially from the assumption that though equilibrium prices are fixed at the beginning of the week, cash payments and receipts are randomly distributed over the week and the individual attaches disutility to the prospect of being unable to pay cash on demand. A rise in prices lowers the real value of an individual's initial cash holding and, provided that neither goods nor real balances are "inferior," reduces his demand for both (implying a less than unit-elastic demand curve for money with respect to its purchasing power); but a proportional rise in prices accompanied by an equiproportional increase in the individual's initial money

of money [93, Ch. 12]: wage and price flexibility, inelastic expectations, absence of "money illusion," absence of "distribution effects," homogeneity of "bonds," and absence of government debt or open-market operations.⁴ This rarified set of assumptions is the main object of attack in J. G. Gurley and E. S. Shaw's *Money in a Theory of Finance* [52], a central purpose of which is to elucidate the conditions under which money will not be neutral.

Mention must first be made of an earlier, and influential, article by L. A. Metzler [83], whose analysis underlies the final assumption listed above. Metzler argued that the wealth-saving relationship assumed in the use of the Pigou effect by Keynes' critics to demonstrate that price flexibility would maintain full employment in the Keynesian model⁵ implied a theory in which changes in the quantity of money could affect the rate of interest (and consequently the rate of growth). Assuming for simplicity that government obligations are fixed in real terms, and that interest on government holdings of its own debt is returned as income to the community, Metzler showed that the price increase consequent on monetary expansion effected by open-market purchase of government debt would leave the community with a smaller stock of real assets and a greater willingness to save, thus lowering the equilibrium interest rate, though monetary expansion effected through the printing press would not alter the equilibrium interest rate. As Haberler shortly pointed out [54], Metzler's analysis of open-market operations implicitly rests on a distribution effect (the private sector but not the government being assumed to be influenced by a change in the latter's real debt); but subsequent writers, including Patinkin, have accepted this as a legitimate assumption, and Gurley and Shaw's analysis builds on it.

⁴ Absence of money illusion means that behavior depends on the real and not the money values of income, balances, and bonds; absence of distribution effects, that behavior is unaffected by redistributions of total real income, balances, and bonds among individuals, such as result from price-level changes; homogeneity of bonds, that behavior is affected only by the net creditor position of the private sector, not by the totals and composition of its assets and liabilities; absence of government debt or open market operations, that the net creditor position of the private sector consists in its holding of fiat money, or that, if government debt fixed in real terms is introduced (the Metzler case discussed below), its quantity does not alter when the quantity of money changes. The assumption of absence of distribution effects might seem unnecessary, on the Archibald-Lipsey argument, but that argument does not apply to this model, which by construction cannot be in full stationary equilibrium: see Ball and Bodkin's criticism of Archibald and Lipsey, which the latter accept [7, pp. 44-49].

⁵ The Pigou effect in modern usage is the effect on the demand for goods of a change in private real wealth resulting from the effect of a change in the price level on the real value of net private financial assets, the latter consisting of net government debt outstanding (including fiat money) and the part of the money supply backed by gold; it is the real balance effect corrected for the presence of government debt and money issued against private debt.

Gurley and Shaw's book is related to their earlier work on financial intermediaries in relation to economic growth and monetary policy; these aspects of their analysis will be taken up in the appropriate context. Their contribution to the neutrality discussion, apart from their insistence that rigidities, money illusion, expectations, and distribution effects may be quite important in actuality, consists in bringing back into the analysis the monetary and financial structure and the differing liquidity characteristics of different assets excluded by assumption in Patinkin's models. They begin by constructing a simple model alternative to Patinkin's, in which money is not itself government debt but is issued by the monetary authority against private debt ("inside" money, as contrasted with "outside" money), and showing that in this model the price level is determinate⁶ and money is neutral. They then show that money will not be neutral in a system containing inside and outside money, outside bonds, or a variety of securities against which money can be created. The key to these results is that in these cases an increase in the quantity of money of either variety, accompanied by a proportional increase in the prices of goods and private debts, alters the relative quantities of the various assets to be held by the public; and their significance to the neutrality debate can be reduced to any arbitrarily low level by arguing that they depend on a distribution effect, and that the appropriate test of neutrality is an equiproportional change in inside money, the assets backing it, and outside assets (see Patinkin [91, p. 108]). It may also be remarked that the results depend in no way on the presence of financial intermediaries.

Gurley and Shaw's analysis follows the tradition of Metzler and Patinkin in relating nonneutrality to the existence of government debt; their inside-money analysis merely makes noninterest-bearing as well as interest-bearing government debt a disturber of neutrality. This tradition leaves modern formal monetary theory rather awkwardly dependent on adventitious institutional or historical details; and the question naturally arises whether this is the best that can be done. The source of the difficulty lies in the implicit distribution effect introduced by the recognition that, unlike other debtors, the government does not have to worry about the size of its debts. For this difference there

⁶ Their insistence on the determinacy of the price level, in contrast to what they take to be the implication of Patinkin's approach (which they term "net money doctrine") [52, p. 76], rests on an understandable misunderstanding. Patinkin's analysis of price-level stability throws the emphasis on the wealth effect of a change in real balances resulting from a price-level change, an effect which only exists when money is a net asset; but it also provides for a substitution effect. Gurley and Shaw's demonstration that the substitution effect is sufficient to determine the price level therefore does not conflict with Patinkin's analysis (for Patinkin's views, see [91, pp. 100-09]), though it does show that Patinkin's emphasis on the wealth effect is misplaced and misleading. The broader implications of this point are discussed below.

are two reasons: (1) the government can always pay its debts by issuing fresh debts, since it controls the money supply, (2) the government can always command the resources required to pay the interest on its debts, since it possesses the taxing power. The latter is the reason relevant to the level of theoretical generality of the neutrality discussion; and at that level it provides grounds for denying that interest-bearing government debt should be treated as net assets of the public. The existence of government debt implies the levying of taxes to pay the interest on it, and in a world of reasonable certainty these taxes would be capitalized into liabilities equal in magnitude to the government debt; hence, if distribution effects between individuals are ignored, a change in the real amount of government debt will have no wealth-effect.⁷ Finally, if this logic applies to interest-bearing government debt, why should it not apply to the limiting case of noninterest-bearing government debt, which is equally a debt of the public to itself, and to commodity moneys, which are the same thing though based on custom rather than law?

This line of reasoning suggests that the more elegant approach to monetary theory lies along inside-money rather than outside-money lines, and that the foundation of the theory of monetary equilibrium and stability should be the substitution effect rather than the (in this case nonexistent) wealth effect of a change in real balances. It also has implications for the dichotomy debate: in the inside-money case the economy can be validly dichotomized into a real and a money sector, since the real-balance effect reduces to a change in the relative quantities of real balances and real debt (see Franco Modigliani [58, pp. 183-84] and Patinkin [91, p. 107]). Finally, it suggests an opportunity for a reassessment of Keynes' theory of employment, which is guiltless of the charges brought against it by Pigou and elaborated by Patinkin and others if interpreted as applying to an inside-money world.

II. *The Demand for Money and the Velocity of Circulation*

As Villard remarked in his earlier survey [123, pp. 316-24], the equation-of-exchange approach to monetary theory was eclipsed by the

⁷In an elegant recent article [86] R. A. Mundell has extended Metzler's analysis by considering explicitly the tax remissions resulting from open-market purchases of government debt. He assumes that corporate taxes are capitalized in the price of equities but that personal income taxes are not capitalized (there being no market for human capital); he allows for the effect of corporate taxation on the incentive to invest; and he demonstrates that Metzler's conclusion is valid if income taxes are remitted, but reversed if corporate taxes are remitted. The nonmarketability of human capital seems an inadequate reason for assuming that people do not feel richer when income taxes are reduced; consideration of the incentive effects of tax changes introduces an interesting new aspect of the neutrality problem but one that lies at a somewhat lower level of abstraction.

income-expenditure approach⁸ after 1930 largely because of the prevailing tendency to treat velocity as determined in principle by institutional factors governing the rapidity of circulation of the medium of exchange and as in practice a constant—a treatment clearly contradicted by experience in the 1930's. The alternative theory expounded by Keynes emphasized the determinants of expenditure; but it also contained a monetary theory founded on the function of money as a store of value and on the special characteristics of money as a form of holding wealth. This theory has been refined and elaborated by subsequent writers in the Keynesian tradition. In the process, Keynes' most extreme departure from previous analysis of the demand for money—his emphasis on the speculative demand for money at the expense of the precautionary—has been gradually abandoned (as has his awkward separation of the transactions and speculative demand for money), and the speculative motive has been relegated to the short run and reabsorbed into the general theory of asset holding. On the other side, the treatment of velocity as determined by payments institutions, while prominent in some expositions of the quantity theory, was by no means the core of classical monetary theory, which clearly recognized the opportunity cost of holding wealth in monetary form; and modern followers of the classical tradition, building on this foundation, treat velocity explicitly as reflecting a demand for money derived from preferences concerning the disposition of wealth.

In consequence, contemporary monetary theorists, whether avowedly "Keynesian" or "quantity," approach the demand for money in essentially the same way, as an application of the general theory of choice, though the former tend to formulate their analysis in terms of the demand for money as an asset alternative to other assets, and the latter, in terms of the demand for the services of money as a good. Aside from some conceptual perplexities concerning the relation between capital and income in this context, the chief substantive issues outstanding are three: first, what specific collection of assets corresponds most closely to the theoretical concept of money—an issue that arises as soon as the distinguishing characteristic of money ceases to be its function as a medium of exchange; second, what the variables are on which

⁸ These terms are intended to distinguish the two main (and historically long-established) schools of thought in monetary theory, one of which formulates its analysis in terms of the quantity of money and its velocity of circulation and the other in terms of the determinants of money expenditure, without ensnaring the exposition in the rights and wrongs of Keynes' protracted quarrel with what he understood by "the quantity theory." As this section explains, neither the quantity theory nor the Keynesian theory is now what it was in the 1930's; in particular, the modern quantity theorist is committed to neither full employment nor the constancy of velocity, and his theory is a theory of the relation between the stock of money and the level of money income, that is, a theory of velocity and not of prices and employment.

the demand for money so defined depends; and third, whether the demand for money is sufficiently stable to provide, in conjunction with the quantity of money, a better explanation of observed movements of money income and other aggregates than is provided by models built around income-expenditure relationships. These are essentially empirical issues, to which empirical research has as yet produced no conclusive answers; and they clearly have an important practical bearing on monetary policy.

A. Developments in Liquidity Preference Theory

To begin with the recent development of Keynesian analysis of the demand for money, subsequent contributions have been concerned with four aspects of Keynes' treatment of this subject: the separation of the demand into a transactions demand dependent on income and a liquidity-preference demand dependent on the rate of interest; the emphasis on the speculative element in liquidity preference; the neglect of wealth as a determinant of liquidity preference; and the aggregation of all assets other than money into bonds implicit in the use of a single (long-term) rate of interest.

The separation of the demand for money into two parts, besides being mathematically inelegant, incorporated the mechanical treatment of transactions demand that Keynes had criticized in the quantity theory. Keynesian writers (for example, Alvin Hansen [56, pp. 66-67]) began to treat transactions demand as reflecting economic behavior and particularly as being interest-elastic, from which it was a short step to making the demand for money as a whole depend on income and the rate of interest. The logic of treating transactions demand as reflecting rational choice was subsequently provided by W. J. Baumol [9] and James Tobin [117], the former's analysis being more interesting in that it links the problem to inventory theory. Both authors show that an economic unit starting a period with a transactions balance to be spent evenly over the period, and having the opportunity of investing idle funds at interest and withdrawing them as needed at a cost partly fixed per withdrawal, will disinvest at more frequent intervals (carry a lower average cash balance) the higher the rate of interest. They also show that the average cash balance held by the unit will be higher the higher the amount of the initial transactions balance, but less than proportionately higher.⁹

⁹ Ralph Turvey [121, p. 33], following Richard Selden [104, pp. 209-10], argues that the interest-elasticity conclusion does not extend to aggregate behavior because a change in the interest rate will have the opposite effect on the demand for cash of a unit facing a maturing debt and having the alternatives of holding cash in the interim or spending it and borrowing later. This argument involves an elementary confusion between saving behavior and asset management: savings effects of interest rate changes aside, the unit in

Keynes' emphasis on the extremely short-run speculative motive as the source of interest-elasticity in the liquidity demand for money was one of the main targets of Keynes' critics. Subsequent Keynesian writing has stressed Keynes' alternative explanation of liquidity preference, which rests this interest-elasticity on uncertainty about the future interest rate rather than on a definite expectation about its level; this explanation is really the precautionary motive in disguise (see Johnson [61, p. 8]). An elegant exposition of both explanations, using the theory of portfolio management, has been provided by Tobin [115].

The introduction of the value of wealth, which itself depends on the rate of interest, as an explicit determinant of the demand for money was part of a more general process of freeing Keynes' theory from its short-period equilibrium assumptions. It implied for the theory of liquidity preference, as noticed by Lloyd Metzler [83], Ralph Turvey [120] and Frank Brechling [10], that the liquidity-preference curve would be different for a change in the quantity of money brought about by fiscal policy than for a change effected by open-market operations (these two curves, and a third corresponding to constant wealth, are discussed in Turvey [121, Ch. 2]). It also introduces the difficulty, noted earlier by Borje Kragh [69], that the speculative demand curve for money traced out by open-market operations will differ according to the size of the units in which these are conducted, since the effects on wealth will differ. The wealth effects of discontinuity in open-market operations are exploited in Sidney Weintraub's recent contention [124, pp. 156-60] that the speculative demand curve is irreversible, as Richard Davis [30] has subsequently pointed out. At a far more fundamental level, the analysis of the demand for money that emerges from these developments, in which the demand for money depends on the interrelated variables income, the rate of interest, and wealth, raises important conceptual (and econometric) difficulties not always fully appreciated by monetary theorists; these difficulties will be referred to later in connection with Milton Friedman's restatement of the quantity theory.

The fourth development stemming from Keynes' theory of the demand for money has been the disaggregation of assets other than money and the elaboration of liquidity preference theory into a general theory of the relative prices of (rates of return on) assets of different types. The chief contributions in the direct line of Keynes' own

question would have the same alternative of investing its idle cash at interest, and react the same way. Turvey also argues [121, pp. 28-30] that an increase in the level of a unit's transactions will raise transactions demand only in a probability sense, since there may be an offsetting change in the timing-structures of the unit's payments and receipts.

thought, by Joan Robinson [98] and Richard Kahn [63], are primarily concerned with reasserting Keynes' view that the long-term rate of interest is determined by expectations about the future long-term rate, against Hicks' dismissal of it as a bootstrap theory and his attempt to explain the long-term rate as an average of expected short-term rates [60, pp. 163-64]. Robinson and Kahn both employ a division of assets into cash, bills, bonds, and equities, and a classification of asset-holders into contrasting types according to whether their asset preferences are dominated by capital-uncertainty or income-uncertainty; but Robinson is concerned to set the argument against the background of a growing economy, while Kahn concentrates on a rather subtle analysis of the interaction of the precautionary and speculative motives.

In contrast, U.S. contributions have been prompted by concern with the problems posed for monetary, fiscal, and debt-management policy by the wartime legacy of a large public debt of short average maturity; two early articles influential in subsequent thinking were those of Roland McKean [80] and Richard Musgrave [87]. The common feature of subsequent work is the treatment of assets as possessing varying degrees of liquidity, and the application of general equilibrium theory to the determination of their relative prices (yields), which are treated as the outcome of the interaction of asset preferences and the relative quantities of the different assets available. This approach (which is also central in the analysis of Robinson and Kahn just mentioned) is exemplified in W. L. Smith's study of debt management for the Joint Economic Committee [110] and Ralph Turvey's book on interest rates and asset prices [121]. The latter is notable for its explicit general equilibrium approach and its careful attention to the requirements of consistent aggregation. The formulation of monetary theory as part of a more general theory of asset holding has been carried farthest by the group working at Yale University under the inspiration of James Tobin; their "portfolio-balance" approach has been strongly influenced by Harry Markowitz's work on rational investor behavior (notably [77a]). Unfortunately little of this group's work is yet available in print (see, however, Tobin [113] [115] [116]).

The formulation of the general-equilibrium approach to the theory of asset prices and yields in the literature just described has some implicit biases which are apt to mislead the unwary, especially in its application to the analysis of the term structure of interest rates.¹⁰ In the

¹⁰ This phrase has reference to the pattern of rates on loans of successively longer maturity; statistically it is represented by the "yield curve," which charts the yields on government debts against their maturities. In the English literature the problem appears as that of the relation between the long and the short rate of interest (the bill rate and

first place, there is a tendency to follow too closely Hicks' original sketch of the approach [59] in identifying the typical asset-holder with a bank, borrowing for a shorter term than it lends and therefore preferring the shorter-term assets. In the second place, emphasis on the slippery and ill-defined quality of liquidity as the characteristic differentiating alternative assets tends to divert attention from the linkage of asset markets by speculation, and so to exaggerate the sensitivity of the interest-rate pattern to changes in the relative quantities of assets.¹¹ In this connection it is appropriate to refer briefly¹² to some recent work on the term structure of interest rates by John Culbertson [29] and Joseph Conard [24, Part III], which on its empirical side contributes to filling the gap noted by Villard [123, pp. 336-37] between the theory and the historical facts of interest-rate behavior. Both authors arrive at essentially the same major result, that short and long rates tend to move together in a rational way, though Culbertson regards his analysis as contradicting the classical "expectations" theory whereas Conard regards his as confirming a modified version of it. The explanation of this difference is that Culbertson identifies accepted theory with the incorrect Hicks-Lutz formulation of it, according to which the investor is depicted as choosing between holding a bond to maturity and investing in successive short-term loans over the same period, whereas Conard identifies it with the correct formulation, in which the investor compares the expected yields (including interest and changes in capital value) of alternative assets over the period for which he expects or is obliged to remain invested. A more recent study by David Meiselman [81] advances both the theory and explanation of the rate structure (and incidentally refutes one of Culbertson's main arguments against the expectations theory) by interpreting the yield curve as expressing expected future short-term rates and explaining changes in it as the market's reaction to errors of expectation.

B. *Restatement of the Quantity Theory*

While Keynes' formulation of the theory of demand for money has been evolving in the directions just described, a fundamentally very similar formulation has been developed by a group of scholars asso-

the bond rate), a reflection of the institutional fact that the British government obtains its short-term financing predominantly by three-months bills of exchange, and has a substantial volume of perpetual debt ("consols") outstanding.

¹¹ The sensitivity of the rate pattern to changes in the relative quantities of short-term and long-term debt is the crucial empirical issue in some recent controversies about monetary policy, especially the "bills only" policy.

¹² Shackle's survey of interest theory [105], to which the reader has been referred in the introduction, unfortunately makes very little reference to rate-structure theory, presumably because it has not been discussed recently in English journals. The interested reader is referred to Conard's useful book [24].

ciated with the University of Chicago, inspired by Milton Friedman and claiming allegiance to the quantity theory as handed down in the oral tradition of that institution. The most complete statement of this group's basic theory—which tends usually to be mentioned only briefly in the course of presenting the results of empirical research—is contained in the condensed and rather cryptic restatement of the quantity theory by Friedman that introduces four of their empirical studies [41], a restatement that takes the reader at a hard pace from the fundamental theory to the simplifications required for its empirical application. The central points in the restatement are that the quantity theory is a theory of the demand for money, not of output, money income, or prices; and that money is an asset or capital good, so that the demand for it is a problem in capital theory. In formulating the demand for money as a form of capital, however, Friedman differs from the Keynesian theorists in starting from the fundamentals of capital theory. He begins with the broad concept of wealth as comprising all sources of income, including human beings, and relates the demand for money to total wealth and the expected future streams of money income obtainable by holding wealth in alternative forms. Then, by a series of mathematical simplifications, approximations of nonobservable variables (of which the most important is the representation of the influence of human wealth by the ratio of nonhuman to human wealth), simplifying economic assumptions, and rearrangements of variables, he arrives at a demand function for money which depends on the price level, bond and equity yields, the rate of change of the price level, income, the ratio of nonhuman to human wealth, and a taste variable; finally, he makes neat use of the homogeneity assumption to show that the demand for real balances depends only on real variables and that it can be reformulated as a velocity function depending on the same variables.

In its final form, Friedman's demand function for money is hard to distinguish from a modern Keynesian formulation, especially in view of his remark that the nonhuman to human wealth ratio "is closely allied to what is usually defined as the ratio of wealth to income" [41, p. 8]. The apparent similarity is misleading, however, because what comes out as income originally entered as wealth, i.e. capitalized income, the process of capitalizing it being absorbed by Friedman's simplifications into the yield and wealth-ratio arguments of the function; and, as Friedman indicated by various remarks and has since demonstrated by the application of his permanent income concept to the explanation of the behavior of velocity [38], the "income" relevant to this equation is not income as measured in the national accounts but income conceived of as the net return on a stock of wealth, or wealth

measured by the income it yields. The use of "income" to represent what is really a wealth variable has incidentally contributed to some minor confusions of stock and flow concepts in the writings of Chicago monetary theorists, especially in the alternative formulation of the theory of demand for money as an application of demand theory developed by Richard Selden [104], where money rather than its services is described as the good demanded, the elasticity relating changes in the stock of money demanded to changes in the flow of income is described as an income-elasticity, and money is classed on the basis of the empirical magnitude of this elasticity as a luxury good.

Friedman's application to monetary theory of the basic principle of capital theory—that income is the yield on capital, and capital the present value of income—is probably the most important development in monetary theory since Keynes' *General Theory*. Its theoretical significance lies in the conceptual integration of wealth and income as influences on behavior: Keynes ignored almost completely the influence of wealth, as was legitimate in short-period analysis; and while subsequent writers in the Keynesian tradition have reintroduced wealth they have generally followed the Cambridge practice of restricting wealth to nonhuman property, a practice which encourages uncritical treatment of wealth and income as entirely independent influences on behavior. In consequence, as mentioned earlier, much of the recent monetary literature contains formulations of the demand for money relating it to income, wealth, and the rate of interest, variables which are in fact interdependent and the use of which in this way involves inelegant redundancy and promotes errors in both theoretical reasoning and empirical applications.

The most important implication of Friedman's analysis, however, concerns not the formulation of monetary theory but the nature of the concept of "income" relevant to monetary analysis, which, as explained above, should correspond to the notion of expected yield on wealth rather than the conventions of national income accounting. This concept Friedman has elaborated under the name of "permanent income," and employed in his theory of the consumption function [35] and subsequent empirical work on the demand for money [38]. The statistical application of it has involved estimating expected income from past income, which means that empirically the theory is very similar to theories employing lagged income as a determinant of behavior.¹³ This similarity exemplifies a serious problem in the empirical application and testing of economic theories—the theoretical

¹³ These brief remarks do justice neither to Friedman nor to other consumption theorists, a number of whom have been working towards similar theories (see Johnson [61]).

interpretation of empirical results—which is especially acute in the interpretation of empirical findings on the demand for money because of the interrelationship of income, wealth, and interest.

C. The Distinguishing Characteristics of Money

While the treatment of money as an asset distinguished from other assets by its superior liquidity is common ground among contemporary theorists, the transition from the conception of money as a medium of exchange to money as a store of value has raised new problems for debate among monetary theorists. These problems result from recognition of the substitutability between money (conventionally defined as medium of exchange) and the wide range of alternative financial assets provided by government debt and the obligations of financial institutions, and between money and the access to credit provided by an elaborate credit system, in a financially advanced economy. They concern the related empirical questions of the definition of an appropriate monetary magnitude, and the specification of the variables on which the demand for the selected magnitude depends, questions that pose little difficulty when money is defined as the medium of exchange and its velocity is assumed to be determined by institutional factors. These questions lead into the fundamental question of the importance of the quantity of money in monetary theory and monetary policy, since unless the demand for money—defined to correspond to some quantity the central bank can influence—can be shown to be a stable function of a few key variables, the quantity of money must be a subordinate and not a strategic element in both the explanation and the control of economic activity. Argument and opinion about these issues have frequently been clouded by confusion between constant velocity and a stable velocity function, and between elasticity and instability of the function. In discussing them, it is convenient to describe first the main schools of thought on these issues,¹⁴ and then the empirical research bearing on them.

At the cost of some arbitrary oversimplification, one can distinguish broadly four main schools of thought. At one extreme are those who continue to find the distinguishing characteristic of money in its function as medium of exchange, and define it as currency plus demand deposits adjusted [73]. Next to them are the Chicago quantity theorists, who define the function of money more broadly as a temporary abode of purchasing power,¹⁵ and in their empirical work define money

¹⁴ To keep the bibliography within reasonable bounds, the references below are confined as far as possible to authors who have supported their theories with empirical research, or to recent writings.

¹⁵ The phrase is Milton Friedman's.

as currency plus total commercial bank deposits adjusted, largely to obtain a consistent long statistical series [104] [38]. Both schools believe that there is a stable demand for money (velocity function), though they define money differently. A third school, at the opposite extreme, consists of those, usually specially interested in monetary policy rather than theory as such, who carry recognition of the similarity between money and other realizable assets or means of financing purchases to the point of rejecting money in favor of some much broader concept, measurable or unmeasurable. A measurable concept is exemplified by the long-established Federal Reserve Board theory that what matters is the total amount of credit outstanding, the quantity of money exercising an influence only because bank credit is a component of total credit (see for example [57, pp. 261-63 and 272-76]). An unmeasurable concept is exemplified by the Radcliffe Committee's concept of the liquidity of the economy [127, Ch. 6], the theory of which was left unexplained in its Report but has since been expounded by Richard Sayers [101]; according to this more extreme theory velocity is a meaningless number, the economy being able to economize on money by substituting credit for it without limit [127, p. 133]. This school, in both its variants, does not so much advance a theory as assert a position that implies a highly elastic, complex, or unstable velocity function. The serious controversy of recent years has been aroused by a fourth school, in between those already mentioned, which has been concerned with the implications for velocity of the presence of a substantial volume of liquid assets closely substitutable for money. In the early years after the war, this school was mainly concerned with the influence of short-term public debt; since the mid-'fifties, the centre of attention has shifted to the liabilities of nonbank financial intermediaries.

✓ The leading figures in this last development are J. G. Gurley and E. S. Shaw, who in a series of contributions [50] [51] [53] culminating in a major theoretical work [52] have developed an analysis of the role of finance and particularly of nonbank financial intermediaries in economic development which has important implications for monetary theory. Gurley and Shaw start from the fact that real economic development is accompanied by a process of financial development in which primary securities (those issued to finance expenditure) become differentiated and there emerge financial intermediaries—of which commercial banks are only one variety—whose function is to enable asset holders to hold primary securities indirectly in the more attractive forms of liabilities issued by the intermediaries. Contrary to the main stream of both classical and Keynesian monetary theory, which treats the financial structure as of secondary importance and relates

the demand for money to the long-term rate of interest or to the rate of return on real capital, Gurley and Shaw maintain that monetary theory must take account of these details of financial organization and development, since they affect the demand for money. In particular, they argue that because nonbank financial intermediaries generally offer liabilities which are closer substitutes for money than for primary securities, and hold small reserves of money themselves, their growth tends to reduce the demand for money. One implication of this analysis, which comes out more strongly in their remarks on monetary policy than in their theory,¹⁶ but to which they do not in fact commit themselves, is that the "quantity of money" relevant for monetary theory and policy should include the liabilities of nonbank financial intermediaries.

Gurley and Shaw's work has provoked a number of critical journal articles, but those most specifically concerned with their theoretical analysis of the influence of nonbank intermediaries on the demand for money (by Culbertson [27] and Aschheim [3]) misunderstand both Gurley and Shaw's argument and the theory of credit creation.¹⁷ The important question Gurley and Shaw raise is the empirical one of whether explanation of the demand for money requires introduction of the amounts of or yields on nonbank intermediary liabilities. This requires an elaborate statistical analysis of the demand for money and other assets which they have not yet produced. In [53] they show only that the facts of financial development in the United States can be rationalized by their theory; and Gurley's independent demonstration [49] that interest rates in the postwar period can be explained on the assumption that an increase in liquid assets reduces the demand for money by half as much—that is, that a correspondingly weighted sum of money and liquid assets can be used to represent the "quantity of money" in applying monetary theory—does not prove that money alone would do less well; indeed Gurley explains in an Appendix why money alone could have been used. The results of recent empirical research on the demand for money and velocity by other economists described

¹⁶ Gurley and Shaw believe that present methods of credit control discriminate against banks in their competition with nonbank intermediaries, weakening the effectiveness of monetary policy over the long run, and unlike most of their critics are prepared to contemplate extension of the central bank's regulatory powers.

¹⁷ Patinkin's review [91] of the book translates Gurley and Shaw's argument into his own language and interprets the effect of financial intermediation as an increase in the liquidity of bonds which decreases the demand for money and increases its interest-elasticity. Alvin Marty's review [78] makes the interesting theoretical point that the introduction of a substitute does not necessarily increase the elasticity of demand. Neither reviewer notices that Gurley and Shaw infer increased elasticity only in the special case of an unfunding of government debt, and present a satisfactory reason for it [52, pp. 162-66].

below tend to contradict Gurley and Shaw's contention, since the writers concerned find it possible to explain the demand for money without reference to the variety of alternative assets and do not discover the downward trend in demand for money implied by Gurley and Shaw's thesis. This is, however, only an indirect test; and the empirical research in question is itself controversial.

D. *Empirical Research on the Demand for Money*

Prior to the *General Theory*, empirical research on velocity was primarily concerned with the measurement of the institutional determinants of transactions velocity; since then, attention has shifted to econometric explanation of income velocity and its alternative formulation, the demand for money,¹⁸ one of the prime objects being to determine the existence or otherwise of the Keynesian liquidity trap. An influential early contribution by James Tobin [114] followed Keynes' theory in estimating idle balances by subtracting from total deposits an estimate of active balances derived from the maximum recorded velocity of circulation, and found a rough hyperbolic relationship between idle balances and interest rates, implying a liquidity trap. This relationship broke down for the postwar years, one reason being its failure to include the influence of total wealth; and subsequent researchers have generally preferred to avoid its assumption of a separable and proportional transactions demand in favor of analyzing the total demand for money. Tobin's method has, however, been employed in a more sophisticated form in a recent major study by Martin Bronfenbrenner and Thomas Mayer [13], which relates the demand for idle money (total money being defined as currency plus demand deposits adjusted) to the short-term interest rate, wealth, and idle balances of the previous year. They find that the last two variables explain most of the fluctuations in idle balances, and that the demand for idle balances is interest-inelastic with no tendency for the elasticity to increase as the rate falls. They interpret this last result as evidence against the liquidity trap; the validity of this inference depends on whether the liquidity trap is identified with infinite elasticity at some positive interest rate or an unlimited increase in the quantity of money demanded as the interest rate falls.

Estimates of the total demand function for money, besides avoiding arbitrary assumptions about transactions velocity, are easier to relate to income velocity than estimates of the Tobin type, since they usually

¹⁸ For discussion of the earlier literature, see Villard [123] and Selden [104]; a useful survey of the econometric studies preceding their own work is given by Bronfenbrenner and Mayer [13]. The more traditional type of research on transactions velocity has been continued by a number of contemporary economists, notably George Garvey [46].

use income as one of the explanatory variables.¹⁹ Among a number of such estimates the two most important, in terms of length of period covered, simplicity of the demand function fitted, and intrinsic theoretical interest, are those by Henry Latané [73] and Milton Friedman [38]. Latané, adopting what he called a pragmatic approach to the constant-velocity and Keynesian formulations of demand for money, found that a simple linear relationship between the ratio of money (currency plus demand deposits) to income and the reciprocal of high-grade long-term interest rates fitted the historical data closely. Friedman's contribution builds on Selden's earlier finding [104] that the secular decline in velocity could be explained by the hypothesis that the demand for money (currency plus total commercial bank deposits) increases more rapidly than income (money is a "luxury good"), a finding apparently inconsistent with the fact that income and velocity vary together over the cycle. Friedman resolves the paradox by hypothesizing that the demand for real balances is an elastic function of permanent income, and showing that the apparent inconsistency of the cyclical behavior of velocity with this hypothesis disappears when the expected income and expected prices indicated by the theory are used instead of their observed counterparts; moreover, since this empirical analysis explains velocity without introducing interest rates into the demand function for money, it seems to dispose of the liquidity trap.

These two empirical demand functions for money apparently conflict, in that Latané's depends on both income (with a unitary income elasticity) and the long-term interest rate, whereas Friedman's depends only on income, with an income-elasticity substantially above unity. But there is no necessary conflict, since Friedman's definition of money includes time deposits, and may therefore absorb most of the substitution between demand deposits and currency and interest-bearing assets induced by interest-rate changes. The real issue is which definition of money gives the better empirical results. Latané has since shown [74] that his formulation fits the subsequent data well. He explains the difference between the income-elasticities of the two functions by the facts that over the period covered by Friedman's calculations time deposits (whose inclusion he questions on theoretical grounds) grew more rapidly than demand deposits, and the long-term interest rate declined from 6.4 to 2.9 per cent. (Latané also adduces evidence for the existence of a liquidity trap, though he prefers to explain it by the cost of bond transactions rather than by Keynes' speculative motive.) Friedman's demand function, by contrast, does not fit the subsequent data, since the secular decline in velocity has reversed

¹⁹ An interesting exception is Harold Lydall's derivation of the demand for money from the hypothesis of a constant ratio of liquidity to wealth [77].

itself (Latané's analysis would attribute this to the subsequent upward movement of interest rates). Friedman has since been experimenting with an extended permanent income hypothesis that allows for changes in the confidence with which expectations are held [37]. Latané's demand function, incidentally, can be used to illustrate the difficulty of interpretation mentioned earlier: if wealth is assumed to be measured by income capitalized at the long-term interest rate, the quantity of money demanded in Latané's function can be expressed alternatively as a function of interest and wealth or of wealth and income,²⁰ thus being consistent with a variety of theoretical formulations.

The empirical studies of demand for money just discussed have a bearing on the fundamental issue, the subject of continued controversy in the history of monetary theory: whether monetary theory is more usefully formulated in terms of the demand for and supply of money or of the influence of money on expenditure and income—the equation-of-exchange approach or the income-expenditure approach. This issue, which Keynes' promulgation of the propensity to consume as a behavior relationship more stable than the discredited velocity of circulation seemed to have settled finally in favor of the income-expenditure approach, has become less settled with the postwar failure of the simple consumption function and the increasing complexity of Keynesian models on the one hand, and the increasing sophistication of modern adherents of the velocity approach on the other.

The counterattack on Keynesian income theory first launched by Friedman [36] [41] has been carried further in an article by Friedman and Gary Becker [43], which argues that the proper test of Keynesian theory is not the stability of the consumption function but its ability to predict consumption from investment, and produces some evidence that the investment multiplier is a poorer predictor of consumption than is the trend of consumption. In reply, Lawrence Klein [67] and John Johnston [62] have argued that a proper test should be concerned with the sophisticated and not the naive version of a theory, and should test the predictive power of the complete model and not just one part of it. This preliminary skirmish probably indicates the main lines of the battle that is likely to follow publication of a major study by Friedman and David Meiselman [44], which shows by exhaustive statistical tests on U.S. data since 1897, that except for

²⁰ In [74] Latané uses a linear relationship between income velocity and the rate of interest, $V = .77r + .38$, where $V = M/Y$, the quantity of money divided by income. This yields the demand function for money, $M = Y/ (.77r + .38)$. Using the definition $W = Y/r$, this can be written equivalently as

$$M = \frac{W}{.77 + .38/r} \quad \text{or} \quad M = \frac{W}{.77 + .38W/Y}$$

the 1930's, the quantity of money has been a better predictor of consumption than has autonomous spending.

These results pose an important theoretical problem, since they imply that a change in the quantity of money that has no wealth-effect nevertheless will have an effect on consumption even though it has no effect on interest rates. The difficulty of understanding how this can be prompted the dissatisfaction of Keynes, Wicksell, and other income-expenditure theorists with the quantity theory, and provides the hard core of contemporary resistance to it. Friedman and Meiselman's explanation of their results may therefore initiate a new and possibly fruitful debate on how money influences activity.

III. *The Supply of Money, Monetary Control, and Monetary Dynamics*

A. *The Supply of Money*

The theory of money supply is virtually a newly-discovered area of monetary research. The general practice in monetary theory has been to treat the quantity of money as determined directly by the monetary authority, without reference to the links intervening between reserves provided by the central bank on the one hand, and the total of currency and bank deposits on the other. This treatment has rested on a mechanical analysis of the determination of money supply, very similar to the outmoded treatment of velocity, in which the money supply is related to the reserve base by a multiplier determined by the reserve ratio observed by the banking system, and the ratio between currency and deposits held by the public. In conformity with developments on the side of demand, the trend of recent research on money supply has been towards treating these ratios as behavior relationships reflecting asset choices rather than as exogenous variables, and elaborating the analysis to include the part played by other financial intermediaries than commercial banks, in the process evolving a less mechanical theory of central bank control. In part, recent developments in this area reflect a more general tendency to formulate the dynamics of monetary change in terms of the adjustment of actual to desired stocks rather than in terms of changes in flows.

Though Keynes followed convention in treating the quantity of money as a direct policy variable, other monetary theorists (an early example is Kragh [70]) applied the notion of liquidity preference to the reserve behavior of banks, and the same idea has been incorporated in various Keynesian models (not always consistently) by making the money supply vary with the rate of interest. Theorists concerned with the money supply have, however, tended until recently to stick to the mechanical "money multiplier" approach, extending it

to allow for the different reserve requirements against time and demand deposits and the demand for money by financial intermediaries; and empirical research has followed the same line, partitioning changes in the quantity of money among changes in the currency-deposit and reserve-deposit ratios and the reserve base, and changes in the reserve base among changes in reserve bank liabilities and assets. These techniques can be extremely fruitful—notable examples are Donald Shelby's investigation of the monetary implications of the growth of financial intermediaries [107], and Brunner's empirical study of U.S. monetary policy in the middle 1930's [15]—but asset ratios are a crude technique for representing behavior relationships.

Philip Cagan's study of the demand for currency relative to the total money supply [19] has broken new ground in attempting an economic explanation of the ratio of currency to currency plus total deposits. Cagan examines a number of possible determining factors, and finds that expected real income per capita explains most of the decline in the ratio from 1875 to 1919, while changes in the net cost of holding currency instead of deposits explain most of the variation in the ratio from 1919 to 1955, though the rate of personal income tax (taken to represent the possible gain from tax evasion permitted by using currency for transactions) is required to explain the rise in the currency ratio in the Second World War.

Other researchers have concerned themselves with the response of the banking system to changes in reserves, though so far the published results have been theoretical rather than empirical. Recent work on this problem has departed from the "money-multiplier" approach in three respects: first, in basing the analysis on the behavior of the individual bank instead of the banking system; second, in applying economic theory to the explanation of the level of reserves desired by the bank and relating its behavior in expanding or contracting its assets to the difference between its actual and its desired reserves; and third, in treating the loss of reserves consequent on expansion as a stochastic process. These innovations are exemplified in two recent articles, both intended as a basis for empirical research: Brunner's schema for the supply theory of money [16], the central feature of which is a relationship between a bank's surplus reserves and its desired rate of change in its asset portfolio, formulated in terms of a "loss coefficient" measuring the (probable) loss of surplus reserves per dollar of asset expansion; and Daniel Orr and W. J. Mellon's analysis of bank credit expansion [89], which applies inventory theory to the bank's holding of reserves against cash losses (which are assumed to be random and normally distributed). Orr and Mellon show, in contrast to the results of money-multiplier analysis, that the marginal expansion ratio will be lower than the average for a monopoly bank,

and lower for a banking system than for a monopoly bank; and that for a banking system the marginal expansion ratio depends on the distribution of the additional reserves among banks.

B. *Monetary Control: A Theoretical Issue*

The research just mentioned is concerned with introducing into the theory of money supply recognition of the fact that commercial banks are profit-maximizing institutions with economic behavior patterns on which the central bank must operate to control the money supply. The fact that monetary control operates in this way is the source of one group of issues in recent discussions of monetary policy, to be described in the next section; it also poses the interesting theoretical question of what powers the central bank needs to control the price level. This question has been raised and discussed by Gurley and Shaw [52, Ch. 6], who conclude their book by contrasting monetary control in a private commercial banking system with their standard case, in which the government determines the nominal quantity of money and the deposit rate on it. Unfortunately their argument is nonrigorous and inconsistent: having shown [52, pp. 261-62] that control of the nominal quantity of bank reserves and the rate of interest paid on these reserves is sufficient for control of the price level (though they argue that this control is weaker than in their standard case because bank liquidity preferences or deposit rates may change independently of central bank action), they conclude their discussion of the technical apparatus of monetary control with the statement that "of three indirect techniques—fixing nominal reserves, setting the reserve-balance rate, and setting members' own deposit rate—the Central Bank can get along with any two in regulating all nominal variables in the economic system" [52, pp. 274-75].²¹ Patinkin [91, pp. 112-16] has shown that this statement is incorrect, and that the central bank needs to control nominal reserves and one of the interest rates.²²

C. *Monetary Dynamics*

As mentioned above, one of the recent innovations in the theory of money supply is the analysis of bank response to changes in reserves in terms of the adjustment of actual to desired reserves. This way of stating the problem reflects a more general tendency toward

²¹ Gurley and Shaw also state as a prerequisite of monetary control that the authorities take steps to ensure the moneyness of bank deposits; the necessity for this is debatable.

²² Patinkin goes on to argue that price-level determinacy requires fixity of one nominal quantity and one yield, and would be secured by fixity of the nominal quantity of (non-interest-bearing) outside money; and that therefore Gurley and Shaw should have considered the means by which the central bank changes the price level, instead of the powers required to determine it. This argument raises the question discussed earlier, of the usefulness of founding monetary theory on the real-balance effect.

the formulation of monetary dynamics in terms of adjustment of actual to desired stocks, associated in turn with the formulation of monetary theory in terms of asset choices as described in the previous section. This tendency has developed somewhat apart from, and has been concerned with more fundamental issues than, the controversy over the interrelated issues of stock versus flow analysis and liquidity-preference versus loanable-funds theories that has broken out anew since the war. Much of the relevant literature on the latter subject has been surveyed by Shackle [105]; unfortunately, Shackle's discussion of the issues is vitiated by the erroneous belief that the presence of both a stock of old securities and a flow of new securities implies a conflict of forces—stock demand and supply, and flow demand and supply—operating on the interest rate, and that this conflict poses a dilemma for monetary theory that can only be resolved by the postulation of two rates of interest. It is therefore necessary to describe the controversy briefly, before turning to the more important development in monetary dynamics.

Modern controversy over liquidity-preference versus loanable-funds theories starts from Hicks' demonstration of the formal equivalence of the two [60, pp. 160-62]; Hicks used the fact that Walras' Law permits the elimination of one of the equations in a general equilibrium system to argue that one can omit either the excess-demand-for-money equation, leaving a loanable-funds theory of interest, or the excess-demand-for-securities equation, leaving a liquidity-preference theory of interest. The omitted equations are flow equations; William Fellner and Harold Somers [33] subsequently showed that they could be identified with the desired change in the stock of money or securities over the market period, so that flow analysis and stock analysis of monetary equilibrium were equivalent. Fellner and Somers also argued in favor of the loanable-funds theory and against the liquidity-preference theory that, as the rate of interest is the price of securities, it is more sensible to regard it as determined by the demand for and supply of securities than by the demand for and supply of money. This led to a controversy with L. R. Klein [68], who objected to Fellner and Somers' assumption that the period of analysis starts with equilibrium between actual and desired stocks as begging the question of stock versus flow theory, and declared that the real difference between the liquidity-preference and loanable-funds theories was a dynamic one, liquidity-preference theory maintaining that the rate of interest would change in response to an excess demand for or supply of money, not an excess supply of or demand for securities [68, pp. 236-41].²³

²³ An excess demand for money does not necessarily imply an excess supply of securities, since it may be accompanied by an excess supply of goods.

In commenting on the controversy, Brunner [68, pp. 247-51] pointed out that Fellner and Somers' analysis, while correct, evaded the real issue that Klein was raising—that there is a difference between the dynamic adjustment processes of markets in which the object of demand is primarily a stock to be held, and of those in which the object of demand is primarily a flow to be consumed; but he sided with Fellner and Somers against Klein on the dynamic determinants of interest-rate changes. Earlier, Lerner had produced a much-quoted but untraceable objection to Hicks' original argument: that if the excess demand equation for some commodity (Lerner chose peanuts) is eliminated by Walras' Law, the resulting system includes both a loanable-funds and a money equation, one of which must be used to determine the price of the excluded commodity.

Subsequent contributors to the debate can be classed as those who maintain the identity of the two theories, and those who maintain that the liquidity-preference theory is different from (and superior to) the loanable-funds theory. To clarify the issues, it is convenient to discuss these groups in order. Among the former group, S. C. Tsiang [119], W. L. Smith [111], and Don Patinkin [92] deserve mention—Smith for his compact exposition and explicit recognition of the difference between stock and flow theories of behavior.

Tsiang objects to the Hicks-Fellner and Somers use of Walras' Law to establish the equivalence of the two theories on the Lerner grounds that this law only permits the elimination of one of the general equilibrium equations, and maintains that to establish the equivalence it is necessary to show that the individual can only demand or supply securities by supplying or demanding money. He also objects that the flow demand and supply of money in the Fellner-Somers analysis bears no relation to the stock demand and supply of Keynesian theory. To get around these difficulties (which, as Patinkin [92] shows, are of Tsiang's own creating) Tsiang chooses a period so short that the economic unit cannot plan on using its proceeds from planned sales of commodities to finance planned purchases of them; by this arbitrary device the flow and stock demands for money are equated and the only choice left to the unit is between holding cash (as an idle balance or for spending) and holding securities, so that identity of the two theories (in Tsiang's sense) necessarily follows.

Patinkin's article is an elegant restatement of the Hicksian position. Patinkin argues that the Lerner objection merely means that it is wrong to classify interest theories by the equation omitted, and that the two theories are simply alternative formulations of one general equilibrium theory of interest. He disposes of Tsiang's objection to the Fellner-Somers analysis by showing that the excess flow-demand for money is identical with the excess stock-demand for money for the

period (Patinkin slips in not making explicit that to translate a desired change in a stock over a period into a flow during the period it is necessary to divide the change by the length of the period). Finally, he disposes of Klein's statement of the difference between the two theories by showing that this difference refers to the dynamic behavior of the same market—the securities market—so that the choice of which market to eliminate is not relevant.

Patinkin goes on to argue, with the help of the apparatus of dynamic theory developed in his book, that the Klein hypothesis concerning the dynamics of the interest rate is inherently implausible, since it implies that the interest rate will fall (rise) in the face of excess supply (demand) in the securities market. This argument, appealing as it is, is restricted by its dependence on Patinkin's dynamic apparatus, which permits simultaneous disequilibrium in all markets and relates the direction of movement of individual prices to the excess demand or supply in the corresponding markets. It can be objected both that there is no reason why the movement of price in a market should be dominated by the excess demand or supply in that market (Brunner's argument against Klein recognized this point [68, p. 251]) and that a dynamic analysis of price movements in one market requires specification of how disequilibria in the remaining markets are resolved.²⁴ Further, in setting up a dynamic analysis—particularly a period analysis—explicitly allowing for the (temporary) resolution of disequilibrium, it is possible and sometimes convenient to define the relationships in such a way that Walras' Law does not hold. This is the procedure that has been adopted (implicitly or explicitly) by recent defenders of the liquidity-preference theory: Joan Robinson's exposition of it [98] employs a period analysis in which retailers confronted with unintended increases in inventories finance themselves by releasing cash or securities, and Hugh Rose's dynamic version of Keynes' theory [100] (which behaves according to Klein's hypothesis) uses the same model with inventories being financed by security issues. In both cases the demand and supply of goods are equated *ex post* by the accommodating behavior of retailers, but this behavior is not included in the *ex ante* description of disturbances to equilibrium. F. H. Hahn's reformulation of the liquidity-preference theory as a theory of the ratios in which cash and securities are held [55] employs a similar but more subtle device—a distinction between the investment-planning period, and a shorter "investment-financing" period during which the loanable-funds but

²⁴ Patinkin recognized these difficulties in the discussion of dynamic stability in his book [93, pp. 157-58], and admitted that they made stability a matter of assumption rather than of proof; but he overlooked them in applying his dynamic apparatus to the liquidity-preference loanable-funds controversy.

not the liquidity-preference theory applies—to reconcile the two theories dynamically.

Elegant as it is, Patinkin's analysis is confined to the determination of equilibrium in a single period, and ignores the effects of the changes in stocks determined in that period on the equilibrium determined in the next period. Other participants in the controversy have followed him (or rather Keynes) in abstracting from the process of accumulation of real and financial wealth. The discussion has therefore stopped short of the issue raised by Klein, and elaborated on by Brunner, of the dynamics of price in a market characterized by a large stock and small demand-and-supply flows per period. Brunner [68, pp. 247-49] sketched a theory of such a market; in this theory price is determined at every moment by the demand for the existing stock, but at this price there may be a net flow demand or supply which gradually changes the existing stock and therefore the price; and full equilibrium requires a price which both equates the stock demand and supply and induces a zero net flow.²⁵ A very similar theory has since been elaborated by Robert Clower [22], who uses it to argue that productivity and thrift have only an indirect effect on interest (through the net flow of new securities) unless they affect the stock demand for securities directly by changing expectations. Clower and D. W. Bushaw [23] have produced a general theory of price for an economy that includes commodities appearing only as stocks, commodities appearing only as flows, and commodities appearing as both stocks and flows; in this theory the equilibrium price in the market for a stock-flow commodity must equate both the desired and actual stock and the flow demand and supply, and in the dynamic analysis the rate of change of price depends on both the excess-stock and excess-flow demands.²⁶

Neither the Brunner-Clower nor the Clower-Bushaw theory really solves the stock-flow problem: the former subordinates the flow analysis entirely to the stock, the latter simply adds stock and flow analyses together. The defect common to both is the absence of a connection between the price at which a stock will be held and the current rate

²⁵ In describing a mathematical model of this theory, Brunner admits two possible situations of partial equilibrium—stock equilibrium and flow disequilibrium and the converse—but nevertheless asserts that the stock relation determines momentary price in both. This inconsistency, which was presumably prompted by his intention to contrast the adjustment processes of markets dominated respectively by stocks and flows, is the source of the dilemma Shackle finds between stock and flow equilibrium as the determinant of price [105, p. 222].

²⁶ Cliff Lloyd [75] has argued that the presence of two equilibrium equations for a stock-flow commodity may invalidate the Hicksian proof of the equivalence of the loanable-funds and liquidity-preference theories. It may be noted that the Clower-Bushaw theory provides a formal solution to the apparent dilemma created by Brunner's alternative partial equilibria.

of change of the stock held, and correspondingly between the price at which a stock will be supplied and the current rate of change of the stock supplied; such connections would yield a simultaneous equilibrium of stock and flow evolving towards full stock equilibrium (zero net flow).²⁷ The addition of such connections would require treating savings and investment as processes of adding to stock, rather than as flows as they have customarily been treated in the post-Keynesian literature.²⁸

This is the approach to monetary dynamics that has been emerging in the past few years, from both "Keynesian" and "quantity" theorists, as an outgrowth of the formulation of monetary theory as part of a general theory of asset holding. The essence of the new approach, elements of which are to be found in recent works of such diverse writers as Cagan [20], Tobin [116], Friedman [40, pp. 461-63] and Brunner [18], is to view a monetary disturbance as altering the terms on which assets will be held (by altering either preferences among assets or the relative quantities of them available), and so inducing behavior designed to adjust the available stocks of assets to the changed amounts desired.²⁹ The new approach has been aptly summarized, from the point of view of monetary policy, by Brunner [18, p. 612]:

Variations in policy variables induce a reallocation of assets (or liabilities) in the balance sheets of economic units which spills over to current output and thus affect the price level. Injections of base-money (or "high-powered" money) modify the composition of financial assets and total wealth available to banks and other economic units. Absorption of the new base money requires suitable alterations in asset yields or asset prices. The banks and the public are thus induced to reshuffle their balance sheets to adjust desired and actual balance-sheet position.

The interaction between banks and public, which forms the essential core of money-supply theory, generates the peculiar leverage or multiplier effect of injections of base money on bank assets and deposits and, correspondingly, on specific asset and liability items of the public's balance sheet. The readjustment process induces a change in the relative yield (or price) structure of assets crucial for the transmission of mone-

²⁷ In one passage [105, p. 223] Shackle outlines a solution to his dilemma along these lines, but does not pursue it further. The Brunner-Clover theory can (with some difficulty) be interpreted as a special case of the general theory, one in which the price at which a stock is held is independent of the current rate of change in the stock.

²⁸ This observation refers to the literature on the Keynesian general equilibrium system, and not to the specialist work on consumption and investment, where the treatment of saving and investment as processes of adding to stock has become well established since the war.

²⁹ While this approach can be described as new in relation to the time-period included in this survey, it can from another point of view be regarded as a development of certain strands in Keynes' thought [65, Vol. I, pp. 200-09] [66, Ch. 11].

tary policy-action to the rate of economic activity. The relative price of base money and its close substitutes falls, and the relative price of other assets rises.

The stock of real capital dominates these other assets. The increase in the price of capital relative to the price of financial assets simultaneously raises real capital's market value relative to the capital stock's replacement costs and increases the desired stock relative to the actual stock. The relative increase in the desired stock of capital induces an adjustment in the actual stock through new production. In this manner current output and prices of durable goods are affected by the readjustments in the balance sheets and the related price movements set in motion by the injection of base money. The wealth, income, and relative price effects involved in the whole transmission process also tend to raise demand for non-durable goods.

✓ IV. *Monetary Policy*

⌘ There is probably no field of economics in which the writings of economists are so strongly influenced by both current fashions in opinion and current problems of economic policy as the field of monetary policy. In the period immediately after the war, economists writing on monetary policy were generally agreed that monetary expansion was of little use in combatting depression. ✓ Skepticism about the effectiveness of monetary restraint in combatting inflation was less marked, though some took the extreme view that monetary restraint would either prove ineffective or precipitate a collapse. ✓ But it was generally thought that the wartime legacy of a large and widely-held public debt was a major obstacle to the application of monetary restraint, both because it was feared that abandonment of the bond-support program adopted to assist war financing would destroy public confidence in government debt, and because the transfer from the government to the private banking system that would result from an increase in the interest payable on the latter's large holdings of public debt was regarded as undesirable. Economists therefore divided into those who advocated schemes for insulating bank-held government debt from general interest-rate movements, as a means of clearing the way for monetary restraint, and those who argued for an extension of selective credit controls. ✓

⌘ The inflation that accompanied the Korean War forced the termination of the bond-support program, and thereafter monetary policy became the chief instrument for controlling short-run fluctuations. The nonmaterialization of the disastrous consequences that some had predicted would follow the termination of the bond-support program, together with the development of the availability doctrine (which enlisted liquidity preference on the side of monetary policy and made

a widely-held public debt a help rather than a hindrance) strengthened confidence in the power of monetary restraint to control inflation, though the availability doctrine also provided ammunition to advocates of selective controls by depicting monetary policy as achieving its results through irrational and discriminatory mechanisms. (Subsequent experience, together with empirical and theoretical research, has fairly conclusively disposed of the availability doctrine's most appealing feature—the proposition that the central bank can produce large reductions in private spending by means of small increases in interest rates—and research has tended to refute the contention that monetary policy operates discriminatorily. Nevertheless, the availability doctrine has left its mark on the field, inasmuch as the majority of monetary economists would probably explain how monetary policy influences the economy by reference to its effects on the availability and cost of credit, with the stress on availability. Trust in the power of monetary restraint to control inflation has been further reduced by the coexistence of rising prices and higher average unemployment in the late 1950's, and the associated revival and elaboration of cost-push theories of inflation. On the other hand, experience of monetary policy in three mild business cycles has revived confidence in the efficacy of monetary expansion in combatting recessions and dispelled the belief that monetary restraint in a boom will do either nothing or far too much. In fact, the wheel has come full circle, and prevailing opinion has returned to the characteristic 1920's view that monetary policy is probably more effective in checking deflation than in checking inflation.³⁰)

(Changing fashions in prevailing opinion apart, the revival of monetary policy as a major branch of economic policy has stimulated much controversy, thought, and research on all aspects of monetary policy.) In addition, the legacy of war debt and the increased size and frequency of government debt operations that it has entailed, together with the difficulties created for the Treasury by "bills only" and other Federal Reserve and governmental policies, has brought the whole subject of debt management within the purview of monetary economists as a special form of open-market operations. It is neither possible nor worthwhile to attempt to survey all the issues discussed in this voluminous literature: the Report of the Commission on Money and Credit [128] contains a consensus of informed professional opin-

³⁰ This account refers, of course, to developments in the United States (compare Paul Samuelson [57, pp. 263-69]). A parallel evolution of opinion has occurred in other countries, though in Britain prevailing opinion, as reflected notably in the Radcliffe Report [127, Ch. 6], has remained skeptical of the efficacy and usefulness of monetary policy; this difference in prevailing opinion is partly responsible for the generally critical reception of the Report by U.S. commentators. Limitations of space make it necessary to confine this section to developments in the United States.

ion on most of them, the usefulness of which is much reduced by the absence of documentation of empirical statements and precise references to conflicting points of view; Friedman's *A Program for Monetary Stability* [34] discusses many of the issues within a consistent theoretical framework; and a 1960 *Review of Economics and Statistics* symposium [57] assembles the views of a variety of monetary specialists. The remainder of this part will instead concentrate on what seem to be the significant developments in three areas: the objectives of economic policy and the instrumental role of monetary policy; the means by which monetary policy influences the economy and their effectiveness; and the adequacy of the tools of monetary policy.

A. The Objectives and Instrumental Role of Monetary Policy

In pre-Keynesian days, monetary policy was the single established instrument of aggregative economic policy, and price stability was its established objective. The Keynesian revolution introduced an alternative instrument, fiscal policy, and a second objective, maintenance of full employment (now more commonly described as economic stability), which might conflict with the objective of price stability. Since the war, debt management has been added almost universally to the list of instruments; and since the middle 1950's many economists have added a third item—adequately rapid economic growth—to the list of objectives. In recent years the balance-of-payments problem has been forcing the admission of a fourth objective—international balance—and may eventually establish a fourth instrument—foreign economic policy.

Recognition of several objectives of economic policy introduces the possibility of a conflict of objectives requiring resolution by a compromise. This possibility and its implications have been more clearly recognized elsewhere (for example by the Radcliffe Committee [127, pp. 17-18]), than in the United States, where there has been a tendency to evade the issue by denying the possibility of conflict³¹ or by insisting that conflicts be eliminated by some other means than sacrifice of the achievement of any of the objectives.³² Where a conflict of objectives has been clearly recognized—notably in the criticisms

³¹ This can always be done by giving priority to one objective and defining the others in terms that implicitly impose consistency with the favored objective; an example is the concept of "sustainable economic growth" promulgated by the Federal Reserve System.

³² One example of this type of evasion is the affirmation that balance-of-payments difficulties should not be allowed to hinder the achievement of domestic policy, an affirmation rarely accompanied by specification of any obviously efficacious solution to these difficulties. Another is the expression of trust that policies designed to increase the competitiveness and efficiency of the economy will eliminate the possibility of conflict between high employment, price stability, and adequate growth. Both are contained in the Report of the Commission on Money and Credit [128, p. 227, p. 45].

directed at the anti-inflationary emphasis of Federal Reserve policy in 1957-60—the arguments about alternative compromises have been qualitative and nonrigorous; rigorous theoretical exploration and quantitative assessment of the costs and benefits of alternative compromises between conflicting policy objectives remain to be undertaken.

The availability of alternative policy instruments introduces the question of their absolute and comparative effectiveness; research on this range of problems has been undertaken by a number of economists, but has not progressed far towards an accepted body of knowledge. As already mentioned, monetary policy since 1951 has resumed a large part of the responsibility for short-run economic stabilization—a consequence of both the inadaptability of the budgetary process to the requirements of a flexible fiscal policy and the domination of the budget by other objectives of national policy than stabilization. Reliance on monetary policy for this purpose has raised the question of how effectively the task is likely to be performed. The argument for using monetary policy is usually expressed in terms of the “flexibility” of monetary policy, by which is often meant no more than that monetary policy can be changed quickly. But the real issues are whether the monetary authorities are likely to take appropriate action at the right time, and whether the effects of monetary action on the economy occur soon enough and reliably enough to have a significant stabilizing effect.

As to the first question, there is general agreement that the Federal Reserve has committed errors in the timing, extent and duration of policy changes. Most economists seem inclined to trust the System to improve its performance with experience and the benefit of their criticism. Some, however, are so distrustful of discretionary authority in principle, or so skeptical of the feasibility of effective stabilization by monetary means, as to advocate that the Federal Reserve should not attempt short-run stabilization, but should confine itself (or be confined) to expanding the money supply at a steady rate appropriate to the growth of the economy (for variants of this proposal, see Friedman [34, pp. 84-99], Angell [57, pp. 247-52], and Shaw [106]). The proposal to substitute a monetary rule for the discretion of the monetary authority is not of course new—Henry Simons’ classic statement of the case for it [108] appeared in the 1930’s—but the definition of the rule in terms of the rate of monetary expansion rather than stability of a price index reflects both the modern concern with growth and a more sophisticated understanding of the stabilization problem.

Whether such a rule would have produced better results than the policy actually followed in the past is a difficult matter to test. Fried-

man [34, pp. 95-98] discusses the difficulties and describes some abortive tests that tend to favor his (4 per cent annual increase) rule. Martin Bronfenbrenner has devised a more elaborate series of tests of alternative rules, including discretionary policy; his results for annual data 1901-1958 (excluding the Second World War) [11] show that a 3 per cent annual increase rule comes closest to the "ideal pattern" defined by price stability, though his subsequent tests on quarterly data from 1947 on [12] suggest the superiority of a "lag rule" relating changes in the money supply to prior changes in the labor force, productivity and velocity. These tests are subject to statistical and theoretical objections, but they open up an interesting new line of research. In the absence of a definitely specified standard of comparison, discussions of the appropriateness of the central bank's monetary policy tend to fall back on textual criticism of its explanation of its actions or the exercise of personal judgment about what policy should have been (see, for example, the contributions of Weintraub, Samuelson, and Fellner to [57]).

The question of the extent of the stabilizing effect that monetary action may be expected to achieve was first raised, at the formal theoretical level, by Friedman [39], who argued that policies intended to stabilize the economy might well have destabilizing effects because of the lags involved in their operation. Subsequent work and discussion on this aspect of monetary policy has concentrated on the length and variability of the lag in the effect of monetary policy, and has become enmeshed in intricate arguments about the proper way of measuring the lag. Two alternative approaches to the measurement of the lag have been employed, direct estimate and statistical inference. The outstanding example of the first is Thomas Mayer's study of the inflexibility of monetary policy [79]. Mayer estimates the lag in the reaction of investment expenditure and consumer credit outstanding to monetary policy changes, sector by sector, and, taking into account lags in monetary-policy changes and the multiplier process, concludes that monetary policy operates on the economy much too slowly for its effects to be quickly reversed; from a computation of the effect that an optimally-timed monetary policy would have had on the stability of industrial production over six business cycles, he concludes that monetary policy is too inflexible to reduce the fluctuation of industrial production by more than about 5 to 10 per cent on the average [79, p. 374]. W. H. White [125] has since argued that Mayer seriously overestimates the average lag, and that the correct estimate would provide almost ideal conditions for effective anticyclical policy; White also remarks that Mayer's results do not show the destabilizing effects indicated as possible by Friedman's analysis.

Statistical inference is the basis of Friedman's contention that

monetary policy operates with a long and variable lag, a contention which figures largely in his opposition to discretionary monetary policy. Friedman's preliminary references to his results, which are yet to be published in full [42], made it appear that this contention rested mostly on a comparison of turning points in the rate of change of the money stock with turning points in National Bureau reference cycles (that is, in the level of activity); this comparison automatically yields a lag a quarter of a cycle longer than does a comparison of turning points in the level of the money stock with reference-cycle turning points, the comparison that Friedman's critics regard as the proper one to make. In reply to criticisms by J. M. Culbertson [26], Friedman has produced a lengthy defense of his measure of the lag, together with other supporting evidence [40]. This defense indicates that the measurement of the lag raises much more subtle and fundamental theoretical and methodological issues than appear at first sight; but the majority of monetary economists competent to judge is likely to agree with Culbertson [28] in finding Friedman's arguments unpersuasive.

Statistical inference is also employed in the study of lags in fiscal and monetary policy conducted for the Commission on Money and Credit by Brown, Solow, Ando and Kareken [14]. These authors claim that Friedman's comparison of turning points in the rate of change of the money stock with turning points in the level of activity involves a methodological *non sequitur*, and find from a comparison of turning points in the rates of change of money with the rate of change of aggregate output that the money stock and aggregate output move roughly simultaneously over the cycle. Their own work attempts to estimate the lag between the indication of a need for a change in monetary policy and the effect of the resulting change in policy on output, and finds that a substantial stabilizing effect is achieved within six to nine months. They also find that fiscal policy operating on disposable income is a more powerful stabilizer, achieving as much as half of its effect within six months.

This research on the lag in effect of monetary policy has been orientated towards determining the efficacy of monetary policy as a stabilizer, on the assumption that monetary policy is decided with reference to contemporaneous economic conditions. Little if any research has been devoted to the more ambitious task of designing optimal systems of changing monetary policy in response to movements of relevant economic indicators. A. W. Phillips [95] and more recently W. J. Baumol [8] have shown that what seem like sensible procedures for changing a policy variable in response to changing conditions may well aggravate instability; Phillips has applied the theory

and concepts of control systems to the analysis of the effects of alternative operating rules of stabilization policy.

B. The Effectiveness of Monetary Policy

To turn from the instrumental role of monetary policy to the related but broader questions of how monetary action influences the economy, and how effectively, the prevailing tendency has been to approach these questions by analyzing how monetary policy, and particularly open-market operations, affect the spending decisions of particular sectors of the economy. This formulation of the problem is a natural corollary of Keynesian theory, and the evolution of the analysis since the war has closely reflected the evolution of monetary theory, though with a perceptible lag; but the analysis has also been strongly influenced by the availability doctrine. That doctrine, the formulation of which was largely the work of Robert Roosa [99], emerged in the later years of the bond-support program as a solution to the conflict between the belief that a large widely-held public debt obliged the central bank to confine interest-rate movements to narrow limits and the belief that large interest-rate changes were necessary to obtain significant effects on spending.

The doctrine comprised two central propositions. The first was that widespread holding of public debt, particularly by financial institutions and corporations, facilitates monetary control by transmitting the influence of interest-rate changes effected by open-market operations throughout the economy. The second was that small interest-rate changes could, by generating or dispelling uncertainty about future rates and by inflicting or eliminating capital losses that institutions were unwilling to realize by actual sales ("the pinning-in effect"), achieve significant effects on spending even if the demands of spenders for credit were interest-inelastic—these effects being achieved by influencing the willingness of lenders to lend or, put another way, by influencing the availability of credit to borrowers by altering the terms of credit and the degree of credit rationing. The second proposition has turned out on subsequent investigation to depend on incorrect empirical assumptions about institutional behavior, particularly with respect to "the pinning-in effect" (see Warren Smith [112]) and on a doubtful asymmetry between the reactions of lender and borrower expectations to interest-rate changes (see Dennis Robertson [97]), as well as to involve some logical inconsistencies (see John Kareken [64], and for a theoretical defense of the availability doctrine, Ira Scott [103]). Nevertheless, the doctrine and discussion of it have helped to popularize the concept of "availability of credit" as one of the main variables on which monetary policy operates.

"Availability" actually comprises a number of disparate elements—the liquidity of potential lenders' and spenders' assets, the terms on which lenders will extend or borrowers can obtain credit, and the degree to which credit is rationed among eligible borrowers (see Kareken [64]). Emphasis on these factors as influences on spending has provided new arguments for those who favor selective credit controls—specific arguments for controls where the terms of credit rather than the cost of credit seem the effective determinant of spending decisions, as in the case of instalment credit, and a general defensive argument based on the discriminatory character of credit rationing. The most powerful attack on the discriminatory character of allegedly general methods of economic control has come from J. K. Galbraith [45], who has maintained that the use of monetary and fiscal policy has favored the monopolistic at the expense of the competitive sectors of the economy to an extent comparable to repeal of the antitrust laws. Others have maintained that monetary restraint discriminates against small business. Empirical studies by Bach and Huizenga [6] and Allen Meltzer [82] show that this is not true of bank credit; Meltzer's study finds that while small firms have greater difficulty in obtaining non-bank credit in tight periods than large firms, this discrimination tends to be offset by extension of trade credit from large firms to small.

The emphasis on the availability of credit as a determinant of expenditure has led to a critical re-examination of the business-attitude survey findings that formerly were used as evidence that business investment is insensitive to monetary policy. In addition, monetary theorists have tended to raise their estimates of the sensitivity of business investment to changes in the cost of credit. These reassessments have been based on the opinion that investors' expected profits are more finely and rationally calculated than used to be thought, rather than on any impressive new empirical evidence of such sensitivity. The most definite new empirical evidence there is confirms the long-time theoretically established sensitivity of residential construction to interest-rate changes, and even this sensitivity has been attributed in part to the influence of ceiling rates on federally-guaranteed mortgages on the willingness of institutional lenders to lend on such mortgages [128, p. 51]. The failure of empirical research to disclose such sensitivity may, as Brunner has suggested [18, p. 613], be the consequence of too simple a theoretical approach, the attempt to relate a flow of expenditure on assets to the cost of credit without adequate recognition of the range of alternative assets or the complexities of stock-adjustment processes. The new approach to monetary dynamics described in the previous part suggests that a more sophisticated

theory of real investment is necessary for successful empirical work; on the other hand, some of the empirical work described in Part II suggests that better results might be achieved by working with changes in the quantity of money than by attempting to determine the influence of changes in interest rates on particular categories of spending.

The discussion of the effectiveness of monetary policy just described has been concerned with monetary policy operating in a given institutional environment. (Since the middle 1950's a new debate has been opened up, concerned with the fact that traditional methods of monetary control are primarily directed at commercial bank credit, and the possibility that institutional change stimulated by monetary restriction may reduce the effectiveness of traditional techniques of monetary control. The main debate has been concerned with Gurley and Shaw's contention [50, pp. 537-38] that the growth of financial intermediaries, prompted in part by the competitive handicaps imposed on commercial banks for purposes of monetary control, progressively provides close substitutes for money the presence of which weakens the grip of monetary policy on the economy; and with their suggestion that the controlling powers of the central bank should be extended beyond the commercial banks to other financial institutions.³³ The debate has ranged over a wide territory, including such matters as whether existing controls over commercial banks are really discriminatory, given that banks enjoy the privilege of creating money (Aschheim [3] and Shelby [107]) and whether imposition of credit controls on financial intermediaries would in fact improve the effectiveness of monetary policy or the competitive position of the banks (David Alhadeff [1]). From the point of view of monetary policy, the central issue is not whether financial development leads to a secular decline in the demand for money—by itself, this would increase the leverage of monetary policy (Shelby [107]) and could readily be assimilated by the monetary authorities ([128, pp. 80-81] and Axilrod [5])—but whether the liabilities of financial intermediaries are such close substitutes for money that monetary restriction is substantially offset through substitution for bank deposits of other financial claims backed by only a small fractional reserve of money—in short, whether financial intermediaries substantially increase the interest-elasticity of demand for money. This is an empirical question; and the empirical evidence

³³ A related but different argument has been advanced by Hyman Minsky [85], to the effect that monetary restriction stimulates financial innovations that progressively reduce the demand for money, increase the velocity of circulation, and threaten to make the money market unstable; Minsky recommends extension of the lender-of-last-resort function to the whole market and not merely the commercial banks. Arguments similar to those of Gurley and Shaw and Minsky may be found in Smith [112].

so far is that shifts by the public from money into thrift assets in periods of monetary restraint have not had a significant influence on velocity ([128, pp. 78-80]; see also Smith [110]).

C. The Adequacy of the Tools of Monetary Policy

The revival of monetary policy as an instrument of short-run stabilization has provoked a great deal of discussion not only of the use and effectiveness of monetary policy, but also of the use and efficiency of the Federal Reserve's traditional instruments of monetary control—open-market operations, rediscount rates, and reserve requirements. Controversy about open-market operations has centered on the "bills only" policy—the policy of conducting open-market operations in Treasury bills only, adopted by the Federal Reserve in 1953, modified later to "bills usually," and abandoned in 1961. Both the availability doctrine and the assets approach to the theory of interest rates imply that the central bank can obtain differential effects on credit conditions according to the maturity of government debt in which it chooses to conduct open-market operations, and can alter the structure of interest rates by switching between short and long maturities. The bills-only policy therefore appeared to most academic economists as an undesirable renunciation by the central bank of an important technique of monetary control, and the reason given for it—the desire to improve the "depth, breadth and resiliency" of the government bond market by eliminating arbitrary central bank intervention in it—as a shallow excuse masking the unwillingness of the Federal Reserve to risk unpopularity with the financial community by overtly subjecting it to capital losses. The surrender of power entailed in bills-only was probably greatly exaggerated by many of its opponents: Winfield Riefler [96] has pointed out that the central bank's choice of securities only contributes about one-eighth of the total effect of its open-market operations, the remaining seven-eighths being determined by the asset choices of the banks whose reserves are altered by the operations; and has produced some evidence that substantial changes in the maturity composition of the public debt have had little effect on the rate structure. On the other side of the argument, Dudley Luckett [76] has shown that the empirical evidence fails to indicate any improvement in "depth, breadth and resiliency" since bills-only was adopted.

While much of the discussion of bills-only has been concerned exclusively with Federal Reserve policy, the fundamental issue involved was the division of responsibility for the maturity composition of government debt held by the public between the Federal Reserve and the Treasury. Bills-only assigned this responsibility, and the associated

responsibility for smoothing the impact of debt-management operations on the market, to the Treasury. One school of thought, represented for example by A. G. Hart [57, pp. 257-58], has maintained strongly that this is an inappropriate division of responsibility, since the Federal Reserve has both the powers and the continual contact with the market required for the purpose and the Treasury has not. (The limited ability of the Treasury to conduct open-market operations has been demonstrated by Deane Carson's study [21] of debt management after the adoption of bills-only.) Others have seen the source of the trouble in the Treasury's debt management practices, particularly the practice of issuing debt in large blocks at irregular intervals, at fixed prices and with maturities "tailored" to market requirements. Carson [21] and Friedman [34, Ch. 3] have proposed similar schemes for replacing present practice by a system of auctioning long-term government debt issues; Culbertson [25] and Friedman [34, Ch. 3] have propounded plans for regularizing the timing and composition of debt issues to reduce the market disturbance of government financing. The difficulties the Treasury has experienced with debt management in the postwar period, in consequence not only of bills-only but of other developments adverse to easy Treasury financing,³⁴ have led many economists to become skeptical of the practicability of a countercyclical debt-management program. Such a program, which would involve issuing long-term debt in booms and short-term debt in depressions, would in any case have a countercyclical influence only insofar as the interest-rate structure is sensitive to change in the composition of the debt, and this sensitivity seems to be too small to yield important stabilizing effects (see Riefler [96] and Meiselman [81]).

Though the growth of the public debt has definitely established open-market operations as the chief instrument of day-to-day monetary control, the revival of monetary policy has been accompanied by a revival of rediscounting and the use of rediscount rates as a control instrument. Controversy over rediscount policy has mainly been concerned with whether rediscount policy is a useful auxiliary instrument of control, or whether the possibility of rediscounting creates an unnecessary and troublesome loophole in the control over member banks afforded by reserve requirements and open-market operations. It can be argued (see Friedman [34, pp. 34-35]) that rediscount rates are a treacherous control instrument, since their restrictiveness depends on their relationship with shifting market rates of interest, and that the growth of bank holdings of public debt and the postwar development of

³⁴ For a comprehensive survey of these developments see Erwin Miller [84].

the federal funds market make it unnecessary for the Federal Reserve to continue to perform the function of lender of last resort for its members.³⁵ There has also been some argument about whether control of the rediscounting privilege gives the Federal Reserve undesirable arbitrary authority over member banks.

Apart from the debate concerning the desirability of rediscounting, a number of writers have criticized the asymmetry of the present reserve-requirement and rediscount-rate system, under which member banks receive no interest on reserves or excess reserves but pay a penalty rate on reserves borrowed to meet deficiencies, and have proposed payment of interest on reserves or excess reserves. Tobin, for example [57, pp. 276-79], has recommended payment of interest at the discount rate on excess reserves, and coupled this with the recommendation to terminate the prohibition of demand-deposit interest and the ceilings on time- and savings-deposit interest, arguing that the justification for intervention in the fixing of deposit rates—to protect depositors by preventing excess competition among banks—has been removed by federal deposit insurance.³⁶

The power to change reserve requirements gives the central bank a method of changing the quantity of bank deposits alternative to open-market operations. The chief differences between the two methods³⁷ are, first, that reserve-requirement changes, being discontinuous, are apt to have disturbing effects on securities markets requiring auxiliary open-market operations; and second, that credit expansion by open-market purchases is less costly for the government and less profitable for the banks than credit expansion by reduction of reserve requirements (and vice versa). The discontinuity and disturbing effects of reserve-requirement changes, dramatically exemplified by their misuse in 1936-37 (see Brunner [15]), have led most economists to believe that they should be used sparingly if at all, especially in restraining credit expansion. The differential effects of the two methods of control on governmental interest costs and bank profits have been the focus of controversy over the policy of lowering reserve requirements fol-

³⁵ The controversy has aroused some interest in the Canadian innovation of setting the discount rate at a fixed margin above the weekly average tender rate on Treasury bills. In England, where the rediscount rate is the chief instrument of monetary policy, recognition of the loophole in monetary control afforded by rediscounting has led to the promulgation of the theory that the liquidity ratio of the commercial banks and the supply of bills, rather than the cash ratio and the quantity of central bank deposits, determine the amount of commercial bank deposits.

³⁶ The fact that this justification was fallacious to begin with has not prevented the Commission on Money and Credit from endorsing the continuation of control of these rates [128, pp. 167-68].

³⁷ For a fuller analysis, see Aschheim [4, Ch. 2].

lowed by the Federal Reserve since 1951. In the course of time the balance of the argument has tilted in favor of reduction of reserve requirements, as the postwar sentiment against high bank profits derived from interest on the public debt has given way to the more recent fear that banks are unduly handicapped by reserve requirements and interest ceilings on deposits in competing with other financial intermediaries.

The controversy has raised the more general issue of how the secular growth of the money supply should be provided for. George Tolley, who first raised this issue [118], has shown that the choice between open-market operations and reserve-requirement variation involves some intricate theoretical issues, since in addition to its implications for debt management and the ease of government financing this choice influences the efficiency of allocation of resources to the provision of the supply of deposit money.

Some attention has also been given to the efficiency of the present system of reserve requirements as an instrument of monetary control. Frank Norton and Neil Jacoby [88] have revived the 1930's Federal Reserve proposal to relate required reserve ratios to deposit turnover rates as a means of introducing an automatic offset to changes in the velocity of circulation. The preponderance of professional opinion, however, seems opposed to any system of reserve requirements that discriminates between banks or affects their profits differentially, and in favor of the removal of inequities among banks by the standardization of reserve requirements.

V. Concluding Remarks

The main impression that emerges from this survey of monetary theory and policy is not only that the field has been extremely active, especially in the past few years, but that it has been on the move towards interesting and important new developments. To summarize what is already a summary is a difficult task, and prediction of the direction of future scientific progress is a risky business; but in the literature surveyed in the preceding sections, two broad trends are evident. One is the trend towards the formulation of monetary theory as a part of capital theory, described in Part II (and implicitly in Part I). As mentioned in Part III, this trend has only just begun to manifest itself in the formulation of monetary dynamics. More important, almost nothing has yet been done to break monetary theory loose from the mould of short-run equilibrium analysis, conducted in abstraction from the process of growth and accumulation, and to integrate it with the rapidly developing theoretical literature on eco-

nomie growth (important exceptions are the models of Tobin [113] and Enthoven [52, App.]). The other trend is that toward econometric testing and measurement of monetary relationships. As is evident from Part IV, econometric methods have barely begun to be applied to the study of relationships relevant to the management of monetary policy.

REFERENCES

1. D. A. ALHADEFF, "Credit Controls and Financial Intermediaries," *Am. Econ. Rev.*, Sept. 1960, 50, 655-71.
2. G. C. ARCHIBALD AND R. G. LIPSEY, "Monetary and Value Theory: A Critique of Lange and Patinkin," *Rev. Econ. Stud.*, Oct. 1958, 26, 1-22.
3. J. ASCHHEIM, "Commercial Banks and Financial Intermediaries: Fallacies and Policy Implications," *Jour. Pol. Econ.*, Feb. 1959, 67, 59-71.
4. ———, *Techniques of Monetary Control*. Baltimore 1961.
5. S. H. AXILROD, "Liquidity and Public Policy," *Fed. Res. Bull.*, Oct. 1961, 47, 1161-77.
6. G. L. BACH AND C. J. HUIZENGA, "The Differential Effects of Tight Money," *Am. Econ. Rev.*, Mar. 1961, 51, 52-80.
7. W. J. BAUMOL, R. W. CLOWER AND M. L. BURSTEIN, F. H. HAHN, R. G. BALL AND R. BODKIN, G. C. ARCHIBALD AND R. G. LIPSEY, "A Symposium on Monetary Policy," *Rev. Econ. Stud.*, Oct. 1960, 28, 29-56.
8. W. J. BAUMOL, "Pitfalls in Contracyclical Policies: Some Tools and Results," *Rev. Econ. Stat.*, Feb. 1961, 43, 21-26.
9. ———, "The Transactions Demand for Cash: An Inventory Theoretic Approach," *Quart. Jour. Econ.*, Nov. 1952, 66, 545-56.
10. F. P. R. BRECHLING, "A Note on Bond-Holding and the Liquidity Preference Theory of Interest," *Rev. Econ. Stud.*, June 1957, 24, 190-97.
11. M. BRONFENBRENNER, "Statistical Tests of Rival Monetary Rules," *Jour. Pol. Econ.*, Feb. 1961, 69, 1-14.
12. ———, "Statistical Tests of Rival Monetary Rules: Quarterly Data Supplement," *Jour. Pol. Econ.*, Dec. 1961, 69, 621-25.
13. ——— AND T. MAYER, "Liquidity Functions in the American Economy," *Econometrica*, Oct. 1960, 28, 810-34.
14. E. C. BROWN, R. M. SOLOW, A. ANDO AND J. H. KAREKEN, *Lags in Fiscal and Monetary Policy*. Forthcoming publication of the Commission on Money and Credit.
15. K. BRUNNER, "A Case Study of U. S. Monetary Policy: Reserve Requirements and Inflationary Gold Flows in the Middle 30's," *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, 1958, 94, 160-201.
16. ———, "A Schema for the Supply Theory of Money," *Internat. Econ. Rev.*, Jan. 1961, 2, 79-109.
17. ———, "Inconsistency and Indeterminacy in Classical Economics," *Econometrica*, Apr. 1951, 19, 152-73.

18. ———, "The Report of the Commission on Money and Credit," *Jour. Pol. Econ.*, Dec. 1961, 69, 605-20.
19. P. CAGAN, "The Demand for Currency Relative to the Total Money Supply," *Jour. Pol. Econ.*, Aug. 1958, 66, 303-28.
20. ———, "Why Do We Use Money in Open Market Operations?" *Jour. Pol. Econ.*, Feb. 1958, 66, 34-46.
21. D. CARSON, "Treasury Open Market Operations," *Rev. Econ. Stat.*, Nov. 1959, 41, 438-42.
22. R. W. CLOWER, "Productivity, Thrift and the Rate of Interest," *Econ. Jour.*, Mar. 1954, 64, 107-15.
23. R. W. CLOWER AND D. W. BUSHAW, "Price Determination in a Stock-Flow Economy," *Econometrica*, July 1954, 22, 328-43.
24. J. W. CONARD, *Introduction to the Theory of Interest*. Berkeley 1959.
25. J. M. CULBERTSON, "A Positive Debt Management Program," *Rev. Econ. Stat.*, May 1959, 41, 89-98.
26. ———, "Friedman on the Lag in Effect of Monetary Policy," *Jour. Pol. Econ.*, Dec. 1960, 68, 617-21.
27. ———, "Intermediaries and Monetary Theory: A Criticism of the Gurley-Shaw Theory," *Am. Econ. Rev.*, Mar. 1958, 48, 119-31.
28. ———, "The Lag in Effect of Monetary Policy: Reply," *Jour. Pol. Econ.*, Oct. 1961, 69, 467-77.
29. ———, "The Term Structure of Interest Rates," *Quart. Jour. Econ.*, Nov. 1957, 71, 485-517.
30. R. M. DAVIS, "A Re-examination of the Speculative Demand for Money," *Quart. Jour. Econ.*, May 1959, 73, 326-32.
31. J. ENCARNACIÓN, "Consistency between Say's Identity and the Cambridge Equation," *Econ. Jour.*, Dec. 1958, 68, 827-30.
32. W. FELLNER AND D. DILLARD, "Keynesian Economics after Twenty Years," *Am. Econ. Rev., Proc.*, May 1957, 47, 67-87.
33. W. FELLNER AND H. M. SOMERS, "Note on 'Stocks' and 'Flows' in Monetary Interest Theory," *Rev. Econ. Stat.*, May 1949, 31, 145-46.
- ✓ 34. M. FRIEDMAN, *A Program for Monetary Stability*. New York 1960.
35. ———, *A Theory of the Consumption Function*. Princeton 1957.
36. ———, "Price, Income and Monetary Changes in Three Wartime Periods," *Am. Econ. Rev., Proc.*, May 1952, 42, 612-25.
37. ———, "The Demand for Money," *Am. Phil. Soc. Proc.*, June 1961, 105, 259-64.
38. ———, "The Demand for Money: Some Theoretical and Empirical Results," *Jour. Pol. Econ.*, Aug. 1959, 67, 327-51.
39. ———, "The Effects of a Full-Employment Policy on Economic Stability: A Formal Analysis," in *Essays in Positive Economics*, Chicago 1953, pp. 117-32.
40. ———, "The Lag in Effect of Monetary Policy," *Jour. Pol. Econ.*, Oct. 1961, 69, 447-66.
- ✓ 41. ———, "The Quantity Theory of Money—A Restatement," in M. Friedman, ed., *Studies in the Quantity Theory of Money*, Chicago 1956, pp. 3-21.

42. ——— AND A. J. SCHWARTZ, *The Stock of Money in the United States 1867-1960* and *The Secular and Cyclical Behavior of the Stock of Money in the United States, 1867-1960*, forthcoming publications of the National Bureau of Economic Research.
43. ——— AND G. S. BECKER, "A Statistical Illusion in Judging Keynesian Models," *Jour. Pol. Econ.*, Feb. 1957, 65, 64-75.
44. ——— AND D. MEISELMAN, *The Relative Stability of Monetary Velocity and the Investment Multiplier in the United States, 1897-1958*, forthcoming publication of the Commission on Money and Credit.
45. J. K. GALBRAITH, "Market Structure and Stabilization Policy," *Rev. Econ. Stat.*, May 1957, 39, 124-33.
46. G. GARVEY, *Deposit Velocity and its Significance*. New York 1959.
47. R. W. GOLDSMITH, *A Study of Saving in the United States*. Princeton 1955.
48. ———, *Financial Intermediaries in the American Economy Since 1900*. Princeton 1958.
49. J. G. GURLEY, *Liquidity and Financial Institutions in the Postwar Economy*. Study Paper 14, Joint Economic Committee, 86th Cong., 2nd sess. Washington 1960.
50. ——— AND E. S. SHAW, "Financial Aspects of Economic Development," *Am. Econ. Rev.*, Sept. 1955, 45, 515-38.
51. ——— AND ———, "Financial Intermediaries and the Saving-Investment Process," *Jour. Finance*, May 1956, 11, 257-76.
52. ——— AND ———, *Money in a Theory of Finance*. With a mathematical appendix by A. C. Enthoven. Washington 1960.
53. ——— AND ———, "The Growth of Debt and Money in the United States, 1800-1950: A Suggested Interpretation," *Rev. Econ. Stat.*, Aug. 1957, 39, 250-62.
54. G. HABERLER, "The Pigou Effect Once Again," *Jour. Pol. Econ.*, June 1952, 60, 240-46.
55. F. H. HAHN, "The Rate of Interest and General Equilibrium Analysis," *Econ. Jour.*, March 1955, 65, 52-66.
56. A. H. HANSEN, *Monetary Theory and Fiscal Policy*. New York 1949.
57. S. E. HARRIS, J. W. ANGELL, W. FELLNER, A. H. HANSEN, A. G. HART, H. NEISSER, R. V. ROOSA, P. A. SAMUELSON, W. L. SMITH, W. THOMAS, J. TOBIN, AND S. WEINTRAUB, "Controversial Issues in Recent Monetary Policy: A Symposium," *Rev. Econ. Stat.*, Aug. 1960, 42, 245-82.
58. H. HAZLITT, ed., *The Critics of Keynesian Economics*. Princeton 1960.
59. J. R. HICKS, "A Suggestion for Simplifying the Theory of Money," *Economica*, Feb. 1935, 2, 1-19; reprinted in F. A. Lutz and L. W. Mints, eds., *Readings in Monetary Theory*, Homewood, Ill. 1951, pp. 13-32.
60. ———, *Value and Capital*. Oxford 1939.
61. H. G. JOHNSON, "The General Theory After Twenty-five Years," *Am. Econ. Rev., Proc.*, May 1961, 51, 1-17; reprinted in H. G. Johnson, *Money, Trade and Economic Growth*, London 1962.
62. J. JOHNSTON, "A Statistical Illusion in Judging Keynesian Models: Comment," *Rev. Econ. Stat.*, Aug. 1958, 40, 296-98.

63. R. F. KAHN, "Some Notes on Liquidity Preference," *Manchester School Econ. and Soc. Stud.*, Sept. 1954, 22, 229-57.
64. J. H. KAREKEN, "Lenders' Preferences, Credit Rationing, and the Effectiveness of Monetary Policy," *Rev. Econ. Stat.*, Aug. 1957, 39, 292-302.
65. J. M. KEYNES, *A Treatise on Money*. London and New York 1930.
66. ———, *The General Theory of Employment Interest and Money*. London and New York 1936.
67. L. R. KLEIN, "The Friedman-Becker Illusion," *Jour. Pol. Econ.*, Dec. 1958, 66, 539-45.
68. ———, W. FELLNER, H. M. SOMERS, AND K. BRUNNER, "Stock and Flow Analysis in Economics," *Econometrica*, July 1950, 18, 236-52.
69. B. KRAGH, "The Meaning and Use of Liquidity Curves in Keynesian Interest Theory," *Internat. Econ. Papers*, 1955, 5, 155-69.
70. ———, "Two Liquidity Functions and the Rate of Interest: A Simple Dynamic Model," *Rev. Econ. Stud.*, Feb. 1950, 17, 98-106.
71. R. E. KUENNE, "Keynes's Identity, Ricardian Virtue, and the Partial Dichotomy," *Can. Jour. Econ. and Pol. Sci.*, Aug. 1961, 27, 323-36.
72. O. LANGE, "Say's Law: A Restatement and Criticism," in O. Lange, F. McIntyre, and T. O. Yntema, eds., *Mathematical Economics and Econometrics*, Chicago 1942, pp. 49-68.
73. H. A. LATANÉ, "Cash Balances and the Interest Rate—A Pragmatic Approach," *Rev. Econ. Stat.*, Nov. 1954, 36, 456-60.
74. ———, "Income Velocity and Interest Rates: A Pragmatic Approach," *Rev. Econ. Stat.*, Nov. 1960, 42, 445-49.
75. C. L. LLOYD, "The Equivalence of the Liquidity Preference and Loanable Funds Theories and the New Stock-Flow Analysis," *Rev. Econ. Stud.*, June 1960, 27, 206-9.
76. D. G. LUCKETT, "'Bills Only': A Critical Appraisal," *Rev. Econ. Stat.*, Aug. 1960, 42, 301-6.
77. H. F. LYDALL, "Income, Assets and the Demand for Money," *Rev. Econ. Stat.*, Feb. 1958, 40, 1-14.
- 77a. H. M. MARKOWITZ, *Portfolio Selection: Efficient Diversification of Investments*. New York 1959.
78. A. L. MARTY, "Gurley and Shaw on Money in a Theory of Finance," *Jour. Pol. Econ.*, Feb. 1961, 69, 56-62.
79. T. MAYER, "The Inflexibility of Monetary Policy," *Rev. Econ. Stat.*, Nov. 1958, 40, 358-74.
80. R. N. MCKEAN, "Liquidity and a National Balance Sheet," *Jour. Pol. Econ.*, Dec. 1949, 57, 506-22; reprinted in F. A. Lutz and L. W. Mints, eds., *Readings in Monetary Theory*, Homewood, Ill. 1951, pp. 63-88.
81. D. MEISELMAN, *The Term Structure of Interest Rates*. Englewood Cliffs, N.J., forthcoming.
82. A. H. MELTZER, "Mercantile Credit, Monetary Policy and Size of Firms," *Rev. Econ. Stat.*, Nov. 1960, 42, 429-37.
83. L. A. METZLER, "Wealth, Saving and the Rate of Interest," *Jour. Pol. Econ.*, Apr. 1951, 59, 93-116.

84. E. MILLER, "Monetary Policies in the United States Since 1950: Some Implications of the Retreat to Orthodoxy," *Can. Jour. Econ. and Pol. Sci.*, May 1961, 27, 205-22.
85. H. P. MINSKY, "Central Banking and Money Market Changes," *Quart. Jour. Econ.*, May 1957, 71, 171-87.
86. R. A. MUNDELL, "The Public Debt, Corporate Income Taxes, and the Rate of Interest," *Jour. Pol. Econ.*, Dec. 1960, 68, 622-26.
87. R. A. MUSGRAVE, "Money, Liquidity and the Valuation of Assets," in *Money, Trade and Economic Growth*, in honor of John Henry Williams, New York 1951, pp. 216-42.
88. F. E. NORTON AND N. H. JACOBY, *Bank Deposits and Legal Reserve Requirements*. Los Angeles 1959.
89. D. ORR AND W. J. MELLON, "Stochastic Reserve Losses and Expansion of Bank Credit," *Am. Econ. Rev.*, Sept. 1961, 51, 614-23.
90. D. PATINKIN, "Dichotomies of the Pricing Process in Economic Theory," *Economica*, May 1954, 21, 113-28.
91. ———, "Financial Intermediaries and the Logical Structure of Monetary Theory," *Am. Econ. Rev.*, Mar. 1961, 51, 95-116.
92. ———, "Liquidity Preference and Loanable Funds: Stock and Flow Analysis," *Economica*, Nov. 1958, 25, 300-18.
93. ———, *Money, Interest and Prices*. Evanston, Ill. 1956.
94. ———, "The Indeterminacy of Absolute Prices in Classical Economic Theory," *Econometrica*, Jan. 1949, 17, 1-27.
95. A. W. PHILLIPS, "Stabilization Policy in a Closed Economy," *Econ. Jour.*, June 1954, 64, 290-323.
96. W. RIEFLER, "Open Market Operations in Long-Term Securities," *Fed. Res. Bull.*, Nov. 1958, 44, 1260-74.
97. D. H. ROBERTSON, "More Notes on the Rate of Interest," *Rev. Econ. Stud.*, Feb. 1954, 21, 136-41.
98. J. ROBINSON, "The Rate of Interest," *Econometrica*, Apr. 1951, 19, 92-111; reprinted in Joan Robinson, *The Rate of Interest and Other Essays*, London 1952.
99. R. V. ROSA [ROOSA], "Interest Rates and the Central Bank," in *Money, Trade and Economic Growth*, in honor of John Henry Williams, New York 1951, pp. 270-95.
100. H. ROSE, "Liquidity Preference and Loanable Funds," *Rev. Econ. Stud.*, Feb. 1957, 24, 111-19.
101. R. S. SAYERS, "Monetary Thought and Monetary Policy in England," *Econ. Jour.*, Dec. 1960, 70, 710-24.
102. J. R. SCHLESINGER, "After Twenty Years: The General Theory," *Quart. Jour. Econ.*, Nov. 1956, 70, 581-602.
103. I. O. SCOTT, "The Availability Doctrine: Theoretical Underpinnings," *Rev. Econ. Stud.*, Oct. 1957, 25, 41-48.
104. R. T. SELDEN, "Monetary Velocity in the United States," in Milton Friedman, ed., *Studies in the Quantity Theory of Money*, Chicago 1956, pp. 179-257.

105. G. L. S. SHACKLE, "Recent Theories Concerning the Nature and Role of Interest," *Econ. Jour.*, June 1961, 71, 209-54.
106. E. S. SHAW, "Money Supply and Stable Economic Growth," in *United States Monetary Policy*, New York 1958, pp. 49-71.
107. D. SHELBY, "Some Implications of the Growth of Financial Intermediaries," *Jour. Finance*, Dec. 1958, 13, 527-41.
108. H. C. SIMONS, "Rules versus Authorities in Monetary Policy," *Jour. Pol. Econ.*, Feb. 1936, 44, 1-30; reprinted in H. C. Simons, *Economic Policy for a Free Society*, Chicago 1948, pp. 160-83.
109. W. L. SMITH, *Debt Management in the United States*. Study Paper No. 19, Joint Economic Committee, 86th Cong., 2nd sess. Washington 1960.
110. ———, "Financial Intermediaries and Monetary Controls," *Quart. Jour. Econ.*, Nov. 1959, 73, 533-53.
111. ———, "Monetary Theories of the Rate of Interest: A Dynamic Analysis," *Rev. Econ. Stat.*, Feb. 1958, 40, 15-21.
112. ———, "On the Effectiveness of Monetary Policy," *Am. Econ. Rev.*, Sept. 1956, 46, 588-606.
113. J. TOBIN, "A Dynamic Aggregative Model," *Jour. Pol. Econ.*, Apr. 1955, 63, 103-15.
114. ———, "Liquidity Preference and Monetary Policy," *Rev. Econ. Stat.*, May 1947, 29, 124-31.
115. ———, "Liquidity Preference as Behavior Towards Risk," *Rev. Econ. Stud.*, Feb. 1958, 25, 65-86.
116. ———, "Money, Capital and Other Stores of Value," *Am. Econ. Rev. Proc.*, May 1961, 51, 26-37.
117. ———, "The Interest-Elasticity of Transactions Demand for Cash," *Rev. Econ. Stat.*, Aug. 1956, 38, 241-47.
118. G. S. TOLLEY, "Providing for Growth in the Money Supply," *Jour. Pol. Econ.*, Dec. 1957, 65, 465-85.
119. S. C. TSIANG, "Liquidity Preference and Loanable Funds Theories, Multiplier and Velocity Analysis: A Synthesis," *Am. Econ. Rev.*, Sept. 1956, 46, 539-64.
120. R. TURVEY, "Consistency and Consolidation in the Theory of Interest," *Economica*, Nov. 1954, 21, 300-7.
121. ———, *Interest Rates and Asset Prices*. London 1960.
122. S. VALAVANIS, "A Denial of Patinkin's Contradiction," *Kyklos*, 1955, 4, 351-68.
123. H. H. VILLARD, "Monetary Theory," in H. S. Ellis, ed., *A Survey of Contemporary Economics*, Philadelphia 1948, pp. 314-51.
124. S. WEINTRAUB, *An Approach to the Theory of Income Distribution*. Philadelphia 1958.
125. W. H. WHITE, "The Flexibility of Anticyclical Monetary Policy," *Rev. Econ. Stat.*, May 1961, 43, 142-47.
126. "A Flow-of-Funds System of National Accounts: Annual Estimates, 1939-54," *Fed. Res. Bull.*, Oct. 1955, 41, 1085-1124.

127. Committee on the Working of the Monetary System (Chairman: The Rt. Hon. The Lord Radcliffe, G. B. E.), *Report*. London 1959.
128. *Money and Credit: Their Influence on Jobs, Prices and Growth*. Englewood Cliffs, N.J. 1961.
129. U. S. Congress, Joint Economic Committee, *Staff Report on Employment, Growth, and Price Levels*. Washington 1959.

CZECHOSLOVAK INDUSTRIAL GROWTH: 1948-1959

By GEORGE J. STALLER*

The importance for the Western world of the industrial growth of the planned economies is today generally accepted. We are fortunate to have at our disposal several independent estimates of the Soviet industrial expansion over the last thirty years.¹ The intense interest in the industrial might of the Soviet Union has not as yet spread to the area of Eastern Europe² which should be considered an integral part of the Soviet industrial empire. This is somewhat surprising in view of the fact that the four major industrial nations of the East European bloc (Czechoslovakia, East Germany, Hungary, and Poland) produce today about one-third of the Soviet output of basic industrial products.³

The purpose of this paper is to present results of the study of one country belonging to the bloc. Czechoslovakia was selected for two reasons. First, together with East Germany, it is industrially the most advanced country of the bloc. Second, the country was industrialized at the time the Communist Party took full control of the government. Thus Czechoslovakia offers an interesting example of a developed industrial complex to which Soviet-type planning was applied *ex post*.

Industrial production facilities became property of the Czechoslovak state in two waves of nationalization. The first came in the fall of 1945 in the form of two presidential decrees which nationalized completely such basic industries as mining and power-generating; a loosely defined criterion of which enterprises were most important for the nation's economy led to varying degrees of nationalization of other industries [50]. The second wave of nationalization came after the Communist Party assumed full control of the government in February 1948. Two nationalization laws, passed in April 1948 [60], abolished

* The author is assistant professor of economics at Cornell University. He wishes to thank M. Gardner Clark, Alfred E. Kahn, Boris P. Pesek, and Maurice C. Ernst for helpful comments. The final version of the paper was written with financial assistance of the Rockefeller Foundation.

¹ For the most recent measure as well as for references to previous work, see [10].

² One notable exception is Stolper's book on the East German economy [39].

³ In 1959, the combined output of these four countries represented the following percentages of Soviet output: electric power, 34.9; hard coal, 35.5; brown coal, 212.4; crude steel, 28.8; cement, 40.5; sulphuric acid, 38.6 [36, pp. 529-35].

for all practical purposes the private sector of Czechoslovak industry.⁴ The future of crafts as a form for the organization of manufacturing activity was decided in the same year; crafts establishments were rapidly transformed and incorporated in industrial enterprises.⁵ Thus the institutional framework within which industry was to operate was established at the beginning of the period under consideration.

The plan of the paper is as follows: The first section discusses the official production index and introduces a new measure of Czechoslovak industrial growth.⁶ The second section describes the changes in industrial structure, the growth of output, and the means to achieve it; the section also compares the growth of Czechoslovak industry with that of its Communist and Western neighbors. The concluding section dwells briefly on the past and the future of the nation's industry.

I. Industrial Production Indexes

According to the official index, which uses the year 1948 as the base period, Czechoslovak industrial production increased 50 per cent by 1951, doubled by 1954, tripled by 1958, and stood at 333 per cent of the 1948 level by 1959 [36, p. 137]. The official measure is a Soviet-type index of gross value of production ascertained at the enterprise level. Two sets of wholesale prices have been used in the calculation: January 1, 1953 prices for the period 1948 to 1955, and July 1, 1954 prices for the ensuing period. The Soviet definition of industrial production and the methods of measuring its growth were fully adopted in the middle of 1952 together with the Soviet planning techniques. The State Statistical Office constructed the index for the first half of the period by retrospective investigation.

The objections that have been raised by Western scholars to the Soviet industrial production index apply equally to the Czechoslovak index, and have in fact been publicly made in Czechoslovakia: faulty procedures in pricing new products or new models of old products [47, p. 304] [42, pp. 702-3] [20, p. 135], the "statistical discovery" of previously unrecorded production, the broadened concept of industrial production [48, p. 286] [3, p. 195] [52], and the changes in vertical integration which affected the magnitude of the gross value of production [1, p. 391] [12, pp. 446-47]. The retrospective investiga-

⁴At the end of 1948, the industrial private sector employed 48.3 thousand people compared to the 1,326 thousand employed in the nationalized sector [8, p. 186].

⁵The number of persons in crafts amounted to 458.9 thousand at the end of 1948. Within two years, employment dropped by 50 per cent and declined further to about 10 per cent of the 1948 level by 1952 [34, p. 180].

⁶A more detailed discussion of the new measure and an evaluation of its reliability is relegated to the appendix.

tion which covered the period 1948 to 1952 raises additional doubts about the reliability of the official index. The definition of gross value of production is quite complex; much of the data necessary for the calculation was simply not available prior to 1952 and had to be estimated [18, p. 226] [43, p. 224].

Severe criticism of the index appeared in Czechoslovak economic literature within two years of its introduction. In contrast to the discussion of other topics, such as wholesale price formation, which was characterized by wide diversity of opinion, there was a consensus among all contributors to the discussion that the official index suffered by an upward bias; not a voice was raised in its defense.⁷ No estimate of the bias was published in Czechoslovakia although it appears that a net value index of industrial production was computed by the State Statistical Office [2, p. 54]. Fortunately, enough data are available on Czechoslovak industry to make possible an independent calculation of a new index of Czechoslovak industrial output which employs the concepts and methodology of Western statistical practice [44].

A. The Weighting System

The year 1948 was selected as both the weight base and the comparison base period. The amount of information on the structure of "industry proper" and on "manufacturing crafts"⁸ in that year exceeds that of any other year of the postwar period. The base-year selection can also be supported by other considerations. The worst shortages caused by the war had been overcome and the reconstruction and conversion to civilian production completed. Moreover, both the factor and the product markets were at this time reasonably similar to Western-type markets, more so than during any other time after the war. The selection of this particular weight base year should not greatly influence the measured rate of growth; the time period covered by the new index is relatively short, and Czechoslovak industry

⁷ For a summary of the discussion, see [58].

⁸ Czechoslovak industrial activity was organized after the Second World War in these two economic sectors. The delineation of the sectors was accomplished shortly before the war: no attempt was made at the time to classify the producing units according to accepted economic criteria—such as the extent of the market supplied by the producing unit, its use of mechanical power, or the number of employees—which usually distinguish these two spheres of economic activity. As a result, certain lines of manufacturing, for example, production of paper mills, glassware, or printing establishments, were all included in industry proper though in many instances the production units had less than five employees. On the other hand, certain large establishments which employed several hundred workers, especially in the woodworking, textiles, and food processing lines, were classified as crafts [17, pp. 336-37]. Manufacturing crafts represented in 1948 the following percentages of the combined value added of the two sectors: metalworking, 9.0; leather and rubber, 14.2; woodworking, 14.0; textiles and clothing, 16.9; provisions, 20.9; stone, clay, and ceramics, 1.7. See Table 1.

was well advanced in 1948. Consequently, no strong correlation between changes in outputs and prices over time is to be expected.⁹

Three sets of weights have been successively employed in the calculation of the new index: value-added weights for individual industries; compensation of employees for industrial sectors and for product groups; and wholesale prices for individual commodities within product groups.

B. Indicators of Output

Different approaches had to be used for measuring the output of crafts and of industry proper since physical output data are not available for the former. It is known, however, that production of consumer goods in the crafts sector, which was widespread in 1948, was rapidly restricted in subsequent years [38, p. 393]. In calculating the new index of output, we could either leave out completely those industrial sectors which absorbed the crafts and assume that the output of these sectors moved parallel to the output of the remaining sectors and industries, or we could measure the movement of crafts' output by employment. The second method was chosen.

The growth of output of industry proper has been measured by quantities expressed in physical units. The average number of civilian products included in the new index for the period as a whole is over 200, the period between 1948 and 1953 being represented by about 150 products and the remaining period by about 300 products. The coverage is better than the numbers indicate: many of the series employed are aggregates. All products for which weights could be found or estimated have been included in the new index of output; no judgment has been exercised as to the "representativeness" of the series.

Only one important adjustment was made to take account of the impact of the Korean War on production in the machinery industry [29, p. 26]. Production in most industrial sectors within the machinery industry shows an uninterrupted growth for the whole period under consideration. However, production in the vehicles sector¹⁰ shows a decline between 1951 and 1954 and a sharp rise thereafter. It is likely that this decrease in output of civilian products was caused by a shift to armaments production. The growth of output of this sector between 1951 and 1954 has been interpolated by an unweighted production index of castings, forgings, rolled products, and hot formed products.

Table 1 presents the results of these computations, showing the index

⁹ The influence of weight base period on the measured rate of growth is discussed in [6, pp. 47-56].

¹⁰ Represented by passenger cars, trucks, busses, trolleys, tractors, and motorcycles.

TABLE 1. THE VALUE-ADDED INDEX OF OUTPUT, 1948 TO 1959
1948 = 100

Industries	Relative Weights	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1948-1959*
Power Generating	4.07	100.0	110.2	123.5	137.0	154.8	164.5	181.1	199.8	230.8	235.8	261.1	291.2	10.2
Mining of Fuels	6.45	100.0	102.9	110.2	113.3	128.5	131.2	141.4	147.3	161.6	180.4	200.5	202.3	6.6
Fuel Processing	3.17	100.0	119.4	118.0	140.2	171.8	165.8	180.2	199.5	206.4	242.5	272.0	294.6	10.3
Smelting	8.35	100.0	108.8	122.8	135.1	153.6	176.4	179.3	198.0	215.7	234.7	246.4	262.3	9.2
Machinery and Metalworking	23.91	100.0	114.5	133.0	147.5	159.1	173.1	177.1	207.3	220.2	251.3	288.2	334.9	11.6
Chemicals	4.56	100.0	109.8	134.0	135.6	163.6	171.8	196.3	242.0	279.5	307.5	338.6	362.0	12.4
Woodworking	5.51	100.0	107.5	129.4	146.4	170.9	166.3	177.1	196.9	204.9	205.4	214.6	220.0	7.5
Paper and Printing	4.39	100.0	109.9	121.6	123.2	119.1	119.7	122.3	125.5	129.2	133.7	148.7	159.0	4.3
Stone, Clay, Ceramics, Glass	7.14	100.0	99.8	106.5	105.7	116.0	116.9	138.9	163.5	187.2	214.8	243.3	279.5	9.8
Textile and Clothing	16.11	100.0	116.1	126.4	126.9	130.2	124.8	116.6	134.0	131.3	140.9	150.9	162.9	4.5
Leather and Rubber	6.45	100.0	103.7	108.5	94.5	93.2	88.4	90.9	93.7	100.0	115.2	125.6	133.5	2.7
Provisions	9.89	100.0	109.4	119.1	122.6	122.1	119.0	122.4	125.9	134.1	144.1	149.2	153.2	4.0
Industry: Total	100.00	100.0	110.6	123.3	129.7	140.3	144.7	150.5	169.2	180.6	199.5	220.0	241.8	8.4
Producer Goods	51.08	100.0	109.0	125.6	138.5	155.2	164.0	169.4	191.4	208.4	232.7	258.8	288.8	10.1
Consumer Goods	48.92	100.0	112.2	120.9	120.5	124.9	124.6	130.7	146.1	151.5	164.8	179.5	192.7	6.1
	100.00													

* Average annual rate of increase (per cent).

Sources: [30, Appendix A and B] [35, pp. 140-67] [36, pp. 160-88].

of total output, broken down among twelve industries, as well as between the producer and consumer goods industries.¹¹

II. *Patterns of Industrial Growth*

The new index of industrial output will be used to answer two broad questions: what happened to the Czechoslovak industrial output and structure, and how did it happen. Moreover, the time pattern of growth over the twelve-year period under consideration will be analyzed, and a comparison with growth of Czechoslovakia's Communist and non-Communist neighbors will be made.

A. *Output Growth and Structural Change*

The expansion of manufacturing output was supported by the growth of the country's fuel base, with coal supplying practically all primary power.¹² Extraction of hard and brown coal increased between 1948 and 1959 by 42 and 126 per cent respectively, with nearly all of the increase coming from existing mines. This growth was achieved through rapid mechanization of both underground and surface mining and by continuous supply of shock-brigade workers temporarily drawn from other occupations [49, p. 72]. However, both these factors led to serious deterioration in the calorific content of coal [19, pp. 787-88]. About one-third of the extracted coal was used in thermal stations for generation of electric power; hydropower supplied about 10 per cent of the total in 1959. Seventy-three per cent of all generated electric power was used in industry, the percentage varying between 81 per cent in 1948 and 71 per cent in 1959.

As Table 1 shows, chemicals and machinery and metalworking industries led the advance by a wide margin. The fastest growing part of the chemicals industry was the pharmaceuticals sector, which was a new field in 1948; output of general chemical works increased by 2.5 times. The growth of machinery and metalworking industry was made possible by the steady expansion of steel production. By 1959, Czechoslovakia produced 452 kilograms of steel per capita, which put her quite close to U. S. production of 477 kilograms and well above Soviet production of 285 kilograms [36, p. 533]. Output of rolled products grew at a steady rate of 7.7 per cent per annum, output of castings and forgings at 10.2 per cent per annum. Compared to these industries,

¹¹ Following the 1948 official classification, producer goods industries are mining, power generating, machinery and metalworking, rubber, and construction materials. Consumer goods industries are textiles, clothing, shoes and leather, glass, woodworking, paper, printing, and provisions.

¹² Between 1952 and 1957, for example, coal accounted for 92.7 per cent of total domestic sources of power [35, p. 138].

most consumer goods industries, such as textiles, glass, ceramics, or shoes and leather, for which Czechoslovakia was known before the war, lagged behind. For the period as a whole, the consumer goods industries registered a growth rate well below the producer goods industries (6.1 as against 10.1 per cent per annum).

Table 2 shows the resulting changes in industrial structure for producer and consumer goods taken as groups, and for leading industries. All three measures (value added, manual workers employment, and fixed capital) clearly indicate the rapid shift toward the producer goods industries, with the machinery and metalworking industry reaching a prominent place by 1959.

B. Inputs and the Output-Input Ratios

Table 3 presents estimates of major industrial inputs. The growth of total employment was made possible in part by the sharp rise in the

TABLE 2. INDUSTRIAL STRUCTURE: 1948 AND 1959

Industries	Value Added (per cent)		Manual Workers Employment (per cent)		Fixed Capital (per cent)	
	1948	1959	1948	1959	1948	1959
Producer Goods	51.08	61.0	49.3	59.1	59.3	71.8
Consumer Goods	48.92	39.0	50.7	40.9	40.7	28.2
	100.00	100.0	100.0	100.0	100.0	100.0
Smelting	8.4	9.1	6.8	8.0	9.9	13.7
Machinery and Metalworking	23.9	33.1	23.5	32.0	18.9	19.4
Chemicals	4.6	6.8	2.7	3.2	2.3	6.1
Textiles and Clothing	16.1	10.9	21.4	15.9	13.7	8.6

Note: Value added in 1948 prices; fixed capital in 1955 prices.

Sources: [22, p. 13] [27, p. 176] [35, p. 117] [36, pp. 135, 144] and Table 1.

number of women employed, from the already high level of 27.5 per cent of the labor force in 1948 to 33.3 per cent in 1953 and to 36.7 per cent at the end of the period [36, p. 90]. The expansion was achieved by the use of both carrot and stick. The increasing weight of the stick was clearly reflected in the progressively stricter labor legislation, beginning in 1947 with the broad general law "Concerning Some Measures to Ensure the National Draft of Labor" [59] and culminating in the 1953 passage of the law "Concerning Measures against Labor Turnover and Absenteeism" which in its Draconian character can be

TABLE 3. INDEXES OF MAJOR INDUSTRIAL INPUTS AND OF OUTPUT-INPUT RATIOS
1948=100

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Inputs												
Employment	100.0	101.9	107.0	113.8	118.5	121.9	125.2	127.5	130.9	136.1	139.7	143.7
Manual Workers	100.0	100.6	103.7	108.2	111.7	112.0	113.9	116.4	119.2	123.9	128.3	132.6
White Collar Workers	100.0	107.4	123.9	142.5	153.4	173.7	183.8	185.4	191.5	199.2	198.8	201.2
Fixed Assets	100.0	103.1	107.2	112.6	119.4	124.9	133.6	141.0	148.5	158.1	168.0	182.0
Fixed Assets Adjusted for Number of Shifts	100.0	105.1	109.0	116.4	127.2	138.3	148.2	157.1	168.1	180.7	194.0	210.2
Agricultural Output	100.0	111.2	133.4	125.1	126.6	133.5	125.4	136.8	144.4	147.0	154.3	148.3
Imports of Materials	100.0	127.3	119.3	133.1	138.2	139.9	151.2	163.7	185.0	211.7	223.0	258.0
Available Energy	100.0	—	—	—	—	116.8	119.5	122.5	135.1	148.7	166.8	165.1
Output-Input Ratios												
Output per Employee	100.0	108.5	115.2	114.0	118.4	118.7	120.2	132.7	138.0	146.6	157.5	168.3
Output per Worker	100.0	109.9	118.9	119.9	125.6	129.3	132.3	145.4	151.5	161.0	171.6	182.4
Output per Fixed Assets	100.0	107.3	115.0	115.2	117.5	115.9	112.6	120.0	121.6	126.2	131.0	132.9
Fixed Assets per Employee	100.0	101.2	100.2	98.9	100.8	102.5	106.7	110.6	113.4	116.2	120.3	126.7

Sources: [15, Table 10] [34, pp. 84, 204] [35, pp. 32, 124-125] [36, pp. 41, 143-44, 155, 160, 164-66, 359-360] and Table 1.

compared with Soviet labor legislation of the 'thirties and early 'forties [56].¹³

On the positive side of inducements, wages and salaries have been increasing steadily. If these official statistics can be trusted, industrial employees' compensation increased faster than their productivity, especially during the early 'fifties [51, p. 543]. An important part of the inflationary pressures prevailing at that time apparently originated in industry and can be partially explained by the wage policy. Though the compensation of manual workers increased considerably faster than that of technical and white collar staff, employment of nonmanual workers grew faster than employment of manual workers.¹⁴ Most of the divergence occurred during the early years of the period and can probably be explained by the creation of the industrial planning and control mechanism.

The capital series is based on statistics of undepreciated value of fixed assets. For measuring the input of capital, the series is adjusted upward by the gradually increasing number of second and third shifts. Taking the first shift as equal to 1, the "coefficient of capital utilization," expressed as the ratio of all workers employed to workers on the first shift, was approximately 1.2 in 1948 and 1.36 in 1959.¹⁵

Three indexes present the approximate inputs of materials used by industry: agricultural output, imports of raw materials and semi-finished industrial products, and apparent consumption of energy. The index of agricultural output is weighted by 1948 prices and is all-inclusive, with most products destined for industrial use. Imports of industrial materials composed 60 to 70 per cent of all imports; their growth is expressed in 1953 foreign-trade prices obtained by deflating current values by an implicit price index for total imports. While the index shows a steady climb throughout the years, it hides an important change away from the Western supplier to the supplier within the Communist bloc; imports from the West dropped by 50 per cent by 1953, while imports from the bloc nearly tripled [36, p. 360]. The index of energy consumption is an indicator of availability of energy in

¹³ According to the letter of the law, the director of an enterprise had to report immediately to the State Prosecutor those workers who missed three working days during a calendar year or who left the enterprise without official permission (see Provisions 5 and 9). In this stringent form, the law was repealed five weeks later because of unrest among workers [57], and the emphasis was shifted to economic pressures.

¹⁴ Between 1948 and 1953, average pay of manual workers increased 54 per cent, of technical personnel 26 per cent, and of white collar workers 18 per cent [14, p. 339].

¹⁵ The coefficient for the year 1948 is our estimate based on growth of industrial consumption of electric power and on increases of the machinery and equipment part of the fixed assets between 1952 and 1959; the figure for 1959 is the official figure [36, pp. 41, 155, and 159].

terms of calories for the whole economy rather than for industry alone.¹⁶ Since the percentage of total energy supplies consumed by industry probably increased during the first five-year plan, the index in the table probably understates the growth of energy input into industry between 1948 and 1953.

Table 3 also presents changes in three output-input ratios and in the ratio of fixed capital to employment. The output per worker grew at a rate of 5.6 per cent per annum, output per employee showing a lower growth rate of 4.8 per cent. The output-capital ratio increased by about one-third between 1948 and 1959. The ratio of capital to employment, which remained practically unchanged for the first four years, increased by 25 per cent between 1952 and the end of the period.

C. The Time-Pattern of Growth

The twelve years covered by the new index of output can be divided into three periods as far as the achieved rate of growth is concerned. The rapid expansion during the first two years can best be explained in terms of fuller utilization of existing capacity.¹⁷ While Czechoslovak industry did suffer damage during the war, the capacities of those industries which became focal points of the postwar growth—machinery and chemicals—were larger in 1948 than in 1937, which, incidentally, was still a depression year in Czechoslovakia.

The pace of expansion fell off by one-half during the early 'fifties, which in retrospect appears to be the crucial period of the postwar development. Profound transformations in both organization of industry and in planning techniques which took place at the time were bound to affect the growth rate adversely. Organizational changes were made at all levels, from the production ministry down to individual enterprises, to improve supervision and to separate out from individual enterprises extraneous lines of production inherited from the capitalist period.¹⁸ These changes in organizational structure were paralleled by changes in planning. The method of "specific tasks" planning (i.e. planning of output targets of a limited number of products), which constituted the core of Czechoslovak planning technique for six years, was given up and over-all planning of the Soviet type was adopted in the middle of 1952 [53] as a cure for the mounting difficulties which Czechoslovak planners experienced.

¹⁶ The component series of the index are hard coal, brown coal, lignite, crude oil, natural gas, and hydroenergy, all adjusted for foreign trade. See [25, p. 22] for similar indexes of energy available in the countries belonging to the Organisation for European Economic Co-operation.

¹⁷ For example, the production of electric power increased between 1948 and 1950 by 23.5 per cent while capacity increased by 6.7 per cent [36, p. 160].

¹⁸ For example, the complaint was made in 1952 that the production of notions was organized under the Ministry of Heavy Industry [54, p. 247].

At the same time, both the over-all targets and the product-mix underwent basic changes. The original goals of the first five-year plan initiated in 1949, which had been raised considerably in 1951¹⁹ were probably lowered in 1953. Producer goods industries were given absolute preference over consumer goods industries, which had developed just as rapidly until 1950 but registered practically no growth between 1950 and 1953. The changes in export-import patterns necessitated by the cold war further aggravated the production problems. A monetary reform, executed swiftly in the middle of 1953, repudiated public debt, reduced drastically privately-held assets,²⁰ and abolished the dual price system. The reform caused considerable dissatisfaction and some unrest among industrial workers. The growth at the end of the second period, between 1953 and 1954, was the lowest one registered during the twelve years.

Though the immediate impact of the acceptance of the Soviet planning system and of the monetary reform was negative, both reforms set the stage for the third period of renewed growth. The first reform gave the Czechoslovak planner an established and tested model. The second provided the State with a tight financial rein over the economy. The turbulent transition from an essentially free-enterprise industrial economy to one integrally planned was accomplished. The necessary planning and control mechanism was completed and the all-important experience in planning the aggregate output was acquired. Moreover, the vigorous investment activity initiated during the first five-year plan, fortified by the new policy of completion of existing investment projects rather than embarkation upon new ones, began to show results. The cold war subsided, and Czechoslovakia re-established contacts with countries outside the Soviet bloc²¹ which provided her with necessary materials as well as markets for her industrial products.

D. *East-West Comparisons*

The pitfalls of international comparisons of economic growth are well known: they include such problems as comparable definitions of industrial production; statistical techniques used in measuring growth; and the level of economic activity in the base year. Yet such comparisons do provide the necessary framework in which to view industrial expansion of a country.

¹⁹ The original plan called for industrial production growth by 57 per cent in 1953 (1948 = 100); the revised plan increased this target by 23 per cent, i.e., to 198 per cent of the 1948 level, with heavy industry scheduled to increase to 348 per cent [55].

²⁰ One estimate puts the total repudiation rate between 71 and 76 per cent of all privately held assets [26, p. 381].

²¹ Between 1953 and 1959, exports to the "capitalist" countries increased by 164 per cent and imports by 176 per cent. The corresponding figures for the trade with the bloc were 80 and 85 per cent [36, p. 359].

Table 4 presents the data for four Communist neighbors of Czechoslovakia for which Western-type industrial production indexes have been calculated: the Soviet Union [10], East Germany [39], Hungary [16], and Poland [5]. Two periods are considered: the first spans nearly a decade, the second covers the latter part of the 'fifties. Czechoslovakia registered over the decade the lowest rate of growth in total output, but the range between Poland's 10.7 and Czechoslovakia's 8.4 per cent per annum is not wide. Moreover, the comparisons in terms of output per employee are more favorable to Czechoslovakia. The

TABLE 4. GROWTH OF INDUSTRIAL PRODUCTION IN SELECTED COMMUNIST COUNTRIES³

Country	Average Annual Percentage Rate of Increase		
	Period	Total Output	Output per Employee
Soviet Union	1950-1958	9.2	5.0 ^a
	1955-1958	8.6	4.6 ^a
East Germany	1950-1958	9.0	5.9
	1955-1958	5.4	3.5
Hungary	1949-1959	10.2	4.8
	1955-1959	6.7	3.4
Poland	1949-1955	10.7	2.3
Czechoslovakia	1948-1959	8.4	4.8
	1955-1959	9.3	6.1

^a Output per man-year in consumer goods and producer goods other than machinery.

Sources: Soviet Union [10, pp. 307, 314].

East Germany [39, pp. 265, 272].

Hungary [13, p. 16].

Poland [5, Table A-1, p. 231][7, p. 81].

Czechoslovakia: Tables 1 and 2.

country registered a surprisingly high growth rate in the late 'fifties, leading the other three countries for which data are available both in terms of total output and output per employee.

Tables 5 and 6 introduce comparisons with some European nations which retained a free-market economy after the war. Austria and the countries which belonged to the European Economic Community were chosen because they are approximately at the same level of economic development as Czechoslovakia.²² Table 5 presents average annual rates of increase for seven basic industries between 1948 and 1959. Czecho-

²² According to United Nations estimates, the 1949 per capita incomes in these countries were as follows: Belgium, \$582; Luxemburg, \$553; France, \$482; Netherlands, \$502; West Germany, \$320; Italy, \$235; Austria, \$216; Czechoslovakia, \$371 [45, p. 14].

TABLE 5. GROWTH OF OUTPUT OF SELECTED INDUSTRIES: 1948-1959,
EUROPEAN ECONOMIC COMMUNITY, AUSTRIA, CZECHOSLOVAKIA

Country	Average Annual Percentage Rate of Increase						
	Electric Power	Mining	Basic Metals	Metal Products	Chemicals	Textiles	Provisions
European Economic Community	8.6	4.8	9.1	10.7	12.7	5.1	8.4
Austria	10.9	7.0	12.7	12.7	7.8	8.3	7.4
Czechoslovakia	10.2	6.6	9.2	11.6	12.4	4.5	4.0

Sources: [25, pp. 18-19] [23, pp. 4-10] and Table 1.

slovakia had an edge over the non-Communist countries in enlarging her fuel base, with basic metal industries developing at about the same rate as in the EEC countries. Czechoslovakia fell behind in the consumer goods industries, bringing into focus the consumer orientation of the Western economy in contrast with the growth orientation of the planned economy. Table 6 presents average annual growth rates for four periods: 1948 to 1959, 1950 to 1955, 1955 to 1959, and 1937 to 1957.²³ Taking the twelve postwar years as a whole, Czechoslovak industrial output grew at about the same rate as that of the non-Com-

TABLE 6. GROWTH OF INDUSTRIAL PRODUCTION IN SELECTED
WESTERN COUNTRIES AND IN CZECHOSLOVAKIA

Country	Average Annual Percentage Rate of Increase					
	Total Output				Output per Employee ^a	
	1948-1959	1950-1955	1955-1959	1937-1957	1948-1959	1955-1959
European Economic Community:						
Belgium	2.9	4.5	0.6	2.4	3.2	1.1
Luxemburg	3.3	5.4	2.3	1.5	—	—
France	6.4	5.6	6.8	2.9	5.5	5.7
Federal Republic of Germany	12.6	12.4	5.9	3.8	7.1	2.0
Italy	8.9	8.8	7.4	4.1	8.5	6.8
Netherlands	6.3	6.2	4.0	4.5	4.4	3.7
All Countries	8.7	8.8	5.8	3.6	—	—
Austria	10.1	9.1	4.1	4.7	6.9	2.6
Czechoslovakia	8.4	6.5	9.3	3.8	4.8	6.1

^a In some countries, employment data cover only manufacturing industries.

Sources: [23, p. 2] [25, pp. 9, 18] [46, p. 54].

²³ The semi-official "provisional index" published by the State Statistical Office has been used for the extension of the new index of output to prewar years; indexes for individual industries have been reweighted by 1948 weights [37, pp. 287-89].

munist countries. The same observation holds for the period 1950 to 1955, and for 1937 to 1957. Considering the preference given by planners to this sector of the economy, it is interesting that Czechoslovak industry did not register a faster rate of growth than its Western counterparts.

The performance of Czechoslovak industry was strong, however, in the second half of the 'fifties. Should the country's growth registered during this period continue in the future,²⁴ Czechoslovakia would catch up with, or forge ahead of, both its Western²⁵ and Communist neighbors.

III. *Concluding Remarks*

Viewed in historical perspective, the industry of today's Czechoslovakia was created to serve the large and assured market of the Austrian monarchy. When an independent Czechoslovak state was created in 1918, it inherited 35 per cent of the monarchy's population, but 75 per cent of her industry (75 per cent of the output of hard coal, 60 per cent of machinery, 75 per cent of chemicals, 92 per cent of glassware, etc.) [4, p. 5]. After a brief interlude between the two World Wars, when the country's industry depended heavily on the world market as a source of raw materials as well as an outlet for finished products, Czechoslovak industry was redeveloped to serve another large market, this time the market of the Communist bloc.

The transformation was accomplished largely by giving top priority to one sector of the economy. During the period under consideration, industry received more than 40 per cent of all investment. The per capita investment in this economic sector was twice the per capita investment in other spheres of material production. As a consequence, industry's fixed capital assets increased by more than 80 per cent between 1948 and 1959, compared to a 50 per cent increase for the whole economy [36, pp. 41, 90, 101, 103] [35, pp. 89, 97, 99]. A similar preference was shown in the allocation of the labor force: while industrial employment increased by 44 per cent, employment in the rest of the economy showed a slight decline.²⁶

The preference of the planners for a specific pattern of industrial growth is revealed by Table 3. The trend described there has con-

²⁴ Taking 1960 = 100, the third five-year plan calls for an increase of gross value of industrial production by 56 per cent by 1965, implying an average annual increase of 9.3 per cent [61, p. 882].

²⁵ The comparison for the last years would be more favorable to the Western countries if the year 1960 were taken as terminal year. Total output of the EEC countries increased by nearly 12 per cent between 1959 and 1960: France, 12 per cent; Germany, 11 per cent; Italy, 15 per cent; Netherlands, 13 per cent [24, p. 2].

²⁶ Agricultural employment decreased from 2,239 thousand in 1948 to 1,623 thousand in 1959 [36, p. 90].

tinued in the third five-year plan currently in operation. Compared to 1960, machinery output is to increase by 83 per cent and chemicals output by 97 per cent, while the consumer durables and the provisions industry are scheduled to increase by 26 and 29 per cent respectively. The third five-year plan continues the stress on industry: investment in this economic sector is to be 88 per cent above the realized investment of the second five-year plan (1955-1960), while average investment in the whole economy is to increase by 59 per cent [61, pp. 882-85, 889].

By gaining political control of Czechoslovakia, the Soviet Union acquired control over a skilled industrial labor force and technical know-how, as well as over large and underutilized industrial capacity. Czechoslovakia has been assigned an important role, first, in the post-war industrialization drive of the Soviet Union;²⁷ second, the industrialization scheme of the East European bloc²⁸ which may compete as an economic power with Western Europe within one generation; and third, the Communist penetration of the markets of the underdeveloped countries.²⁹

APPENDIX: CONSTRUCTION AND EVALUATION OF THE NEW INDEX

The new index of industrial output presented in this paper is based exclusively on Czechoslovak sources such as releases of the State Statistical Office, the State Planning Office, and publications of production ministries, as well as on information contained in various articles.

The classical Laspeyres formula has been used in the computation of the new index. Total output (i.e., output of both industry proper and manufacturing crafts) has been divided into 17 industries with 70 sectors. Six of these sectors have been further subdivided into 36 product groups. The growth of output in crafts is measured by employment; the growth of output for the product groups (or sectors) in industry proper is measured by output of products aggregated by 1948 wholesale prices.³⁰ A product-group index thus takes the form:

$$(1) \quad G = \frac{\sum Q_{ni} P_{oi}}{\sum Q_{oi} P_{oi}}$$

²⁷ For example, exports of machinery and equipment, which represented one-fourth of Czechoslovakia's exports to the Soviet Union in 1949, increased to one-half by 1958 [40, p. 55] [41, p. 4] and the volume of machinery and equipment exports is to increase by 2.6 times between 1958 and 1965 [41, p. 6].

²⁸ In 1958, 45 per cent of Czechoslovakia's machinery exports went to the member countries of the Council for Mutual Economic Assistance. This percentage is scheduled to increase to 60 by 1965 [9, p. 27].

²⁹ Trade turnover with underdeveloped countries reached 11.4 per cent of Czechoslovakia's total in 1958; this represented 38.7 per cent of its trade turnover outside the Communist bloc [11, p. 5].

³⁰ In a few instances 1947 wholesale price ratios, 1948 average export prices, or such indicators of relative scarcity as "plan fulfillment coefficients" were used.

where Q is the quantity in physical units and P is the per unit wholesale price of the i^{th} commodity; the subscript n denotes the current period and the subscript 0 the year 1948.

Product-group (or sector) indexes are aggregated into indexes for individual industries using compensation of employees in lieu of value-added weights:

$$(2) \quad I = \sum G_i \frac{W_i}{\sum W_i}$$

where W_i is the total wages and salaries payments in the i^{th} product group or sector in 1947.³¹

Estimates of value added, derived by subtracting from the value of sales of each industry the value of purchases on current account, have been used at the last stage of aggregation:

$$(3) \quad O = \sum I_i \frac{V_i}{\sum V_i}$$

where O is the index of total output of industry, and V_i is the value added in the i^{th} industry in 1948.

The products used in computing the index are final outputs for the corresponding product-group or industrial sector. Whenever data were missing for some years, the usual assumption was made that the incomplete series move in step with the remaining series representing that particular group. Products for which data became first available after the base year have been linked in. The available sample of products also contains a few commodities, such as aluminum, passenger river boats, motor scooters, or polyvinyl chloride, which were first produced in important quantities after the base year. These new products have been added to the appropriate commodity groups.

The new index of output purports to measure the growth of value added in Czechoslovak industry between 1948 and 1959. Lack of data on inputs of industrial materials in 1948 prices precluded the construction of a net value index; the new index follows the Western statistical practice of index number construction and seeks to approximate a net value index by an index of final outputs combined by value-added (or approximations to value-added) weights. Such an index may differ from the magnitude it is designed to measure for four reasons: first, because of an inadequate weighting system; second, because of an unrepresentative sample of products; third, because the index of final outputs of each product group did not move identically with value added for that group; and fourth, because employment in crafts failed to measure correctly the net output of this economic sector. We shall consider separately each possible source of bias.

1. The ideal system of weights for the new index would be a set of value-

³¹Data on wages and salaries for 1948 are not available in sufficiently detailed breakdown.

added weights for each output. A substitute weighting system introduces a bias in the measured rate of growth if a correlation exists between the growth of the constituent series and their relative over- or underweighting by substitute weights. There appears to be no reason why such a correlation should exist in industrial sectors and product groups within which substitute weights—compensation of employees and wholesale prices—have been used.

In order to estimate the magnitude of bias which could be introduced by the wages and salaries weighting procedure, the following test has been performed on the industry of the Federal Republic of Germany, which is similar to Czechoslovak industry both in structure and pattern of postwar growth. The official German industrial production index has been recalculated by applying wages and salaries in lieu of value-added weights to 31 industries and industrial sectors for which the necessary data were readily available [33, pp. 220-21] [31]. While industrial output of the Federal Republic doubled between 1950 and 1957, the difference between the official and the recalculated indexes remained negligible in all years. Thus it is not likely that the substitute weighting system, used in the calculation of the new index of Czechoslovak industrial output at a lower level of aggregation than in the recalculated index for Germany, introduces a bias in the measured rate of growth.

2. The problem of representativeness of the available sample appears more troublesome. Lack of data does not permit calculation of a coverage ratio for any year, but an evaluation of coverage by inspection is possible. It can be done, for example, by comparing the available sample of products with the extensive list of outputs planned for the year 1953, when industrial planning was already all-inclusive [53, pp. 103-23]. The coverage of civilian production and the distribution of products among various industrial sectors and product groups appear satisfactory. The problem of new products does not loom as large in the case of Czechoslovak industry as in the case of an underdeveloped country. Czechoslovakia was economically advanced in 1948, and genuine new products, as opposed to new models of the same product, did not play a crucial role in its industry's growth. The omission of military items from our sample offers a special problem. Munitions production was probably concentrated in the machinery sector, whose output increased 3.6 times between 1948 and 1959. Since munitions production is included in the weight of the machinery sector, the degree of bias due to omission of military items should not be serious unless the growth of munitions production differed substantially from the rapid growth of civilian machinery production.

A numerical estimate of the possible bias due to the unrepresentativeness of our civilian sample has been derived once more from the industry of the Federal Republic of Germany. The information on Germany's industrial output in physical units has been artificially restricted to the same degree as the information available for the Czechoslovak industry. Applying the 1950 wholesale prices as weights within industries and industrial sectors, and the official value-added weights among industries, a "restricted sample" index has been calculated for the Federal Republic [33, pp. 220-21] [32]. The official and the restricted sample indexes for the whole of industry do not differ in

any year by more than 5 per cent, lending thus some support to the contention that the sample for Czechoslovak industry is representative.

3. The third assumption deals with the relative movements of the value of final outputs as compared to movements in value added. If, for example, purchases from outside constituted an increasing portion of value of final sales of a commodity group, the index would overestimate the growth of value added of that group. However, the period covered by the new index is relatively short and the division of total output into industrial sectors and product groups is quite detailed. Consequently, this consideration does not seem important.

4. Lastly, measuring the output of manufacturing crafts by employment implies that no changes in productivity in the crafts sector occurred during the period under consideration. Generally such an assumption would be of doubtful validity. The assumption seems plausible in the case of Czechoslovakia, considering the fact that as a form of organizing manufacturing activity the crafts sector was doomed right at the beginning of the period. It is not likely that either new investment or improvements in management and organization which would affect productivity occurred in the sector after 1948.

I have defended, so far, the reliability of the new index of Czechoslovak industrial output in an essentially negative way, maintaining that there are no apparent reasons why the measure should suffer by a significant bias in either an upward or downward direction. A more positive approach to the question of reliability of the new index is possible. The new measure is supported by two calculations of growth of Czechoslovak industrial production which are independent of the new index of output. The first one is based on Seton's method of estimating growth of Soviet manufacturing output during the past decade [28]. Searching for a measure which would avoid both the assumption of representativeness of the available product sample and the problem of weights to be assigned to these series, Seton found that a close relationship existed in Western countries between manufacturing output and consumption of fuel, electric power, and steel. The technological conditions representing the relationships between manufacturing output and the three inputs were derived by Seton as coefficients of a multiple regression of manufacturing output on the consumption of these inputs. The coefficients were applied to the Czechoslovak case for the period 1948 to 1953 and for the period 1948 to 1959. The results of the calculation are shown in Table 7.

The second indicator of growth supporting the new index comes from an admittedly unexpected source. As a part of statistics on growth of national income, the Czechoslovak State Statistical Office published for the first time in the *Statistical Yearbook for 1958* the growth of income originating in industry. The official concept of income originating in industry [21], expressed in constant 1954 prices, is much closer to the Western concept of industrial production than to the concept of gross value used in the calculation of the official industrial production index. The growth rate of this measure is also shown in Table 7, together with the official gross value index and the value-added index of output.

It is the author's belief that despite its obvious limitations due to incom-

TABLE 7. MEASURES OF INDUSTRIAL PRODUCTION: 1948-1953 AND 1948-1959

Average Annual Percentage Rate of Increase		
	1948-1953	1948-1959
Official Indexes:		
Gross Value of Production	14.1	11.6
Income Originating in Industry	8.3	8.2
Seton-type Index	7.6	7.9
Value-Added Index of Output	7.7	8.4

Sources: Official indexes: [36, pp. 37, 137].

Seton-type index: [28, pp. 135-136]. The regression equation is: $z = -1.554 + 0.291 f + 0.305 s + 0.582 e$, where z is the average annual growth of output, and f , s , and e are respectively the average annual growth of consumption of fuel, steel and electric power.

Value-added index: Table 1.

plete data, the new index is a reasonably adequate measure of growth of Czechoslovak industrial output between 1948 and 1959.

REFERENCES

1. ANTONIN CERVENY, "K otazce srovnatelnosti dat v prumyslove statistice," *Statisticky obzor* ("The Problem of Data Comparability in Industrial Statistics," *Statistical Review*), 1952, 32 (5-6), 389-97.
2. ———, "Prechod na novy index prumyslove vyroby," *Statisticky obzor* ("Transition to a New Index of Industrial Production," *Statistical Review*), 1958, 38 (2), 53-54.
3. ———A FRANTISEK HERBST, "Planovani a sledovani hrube vyroby v prumyslu," *Statisticky obzor* ("Planning and Measurement of Gross Value of Production in Industry," *Statistical Review*), 1952, 32 (3-4), 187-209.
4. ANATOL DOBRY, *Hospodarska krise ceskoslovenskeho prumyslu ve vztahu k Mnichovu*. (*Economic Crisis of the Czechoslovak Industry in Relation to Munich*). Prague 1959.
5. M. ERNST, The Measurement of Polish Industrial Growth: 1937, 1946-55. Unpublished Ph.D. dissertation, Columbia University, 1959.
6. ALEXANDER GERSCHENKRON, *A Dollar Index of Soviet Machinery Output, 1927-28 to 1937*. RAND rept. R-197. Santa Monica 1951.
7. GLOWNY URZAD STATYSTYCZNY, *Rocznik Statystyczny 1956*. (Central Statistical Office, *Statistical Yearbook 1956*.) Warsaw 1956.
8. FRANTISEK HERBST, "Tridni struktura cs. prumyslu na pocatku prvnj petiletky," *Statisticky zpravodaj* ("Class Structure of Czechoslovak Industry on the Eve of the First Five Year Plan," *Statistical Reporter*), 1949, 12 (5-6), 184-86.
9. TIBOR JIRGES, "Dlouhodobé dohody o vzajemných dodávkách zboží s členskými zeměmi RVHP," *Zahranicni obchod* ("Long Term Agreements With the Member Countries of Comecon Concerning the Deliveries of Goods," *Foreign Trade*), 1960, 15 (10-11), 26-33.

10. N. M. KAPLAN AND R. H. MOORSTEEN, "An Index of Soviet Industrial Output," *Am. Econ. Rev.*, June 1960, 50, 295-318.
11. KAREL KOHOUT, "Plan zahraničního obchodu a jeho plnění v roce 1958," *Zahranicni obchod* ("Plan of Foreign Trade and Its Fulfillment During the Year 1958," *Foreign Trade*), 1959, 14 (4), 2-7.
12. B. KORDA, "O statistickém měření produkce," *Statistický obzor* ("Concerning Statistical Measurement of Production," *Statistical Review*), 1955, 35 (12), 444-50.
13. KÖZPONTI STATISZTIKAI HIVATAL, *Statistikai Havi Közlemények* (Central Statistical Office, *Monthly Bulletin of Statistics*), 1961, No. 6.
14. B. KRATOCHVIL, "Zabránit překročení mzdového fondu," *Statistický obzor* ("Prevent Overdraft of the Wage Fund," *Statistical Review*), 1957, 37 (8), 339-42.
15. GREGOR LAZARCIK, Production and Productivity in Czechoslovak Agriculture, 1934-38 and 1946-59. Unpublished Ph.D. dissertation, Columbia University, 1960.
16. LUKÁCS OTTO-ROMAN ZOLTAN, "Az Ipar Netto Termeles Indexének Felülvizsgálata," *Statistikai Szemle* ("Revision of the Net Industrial Production Index," *Statistical Review*), 1959, 39 (5), 476-96.
17. KAREL MALIK, "Československá statistika průmyslová," *Statistický obzor* ("Czechoslovak Industrial Statistics," *Statistical Review*), 1947, 27 (3), 335-46.
18. R. MALÍR, "Poznámky k statistickému vykaznictví 1952," *Statistický obzor* ("Notes on Statistical Reporting," *Statistical Review*), 1952, 32 (3-4), 225-31.
19. KAREL MATOUS, "Lepe organizovat záměnu paliv," *Planované hospodárství* ("For Better Organization of Substitution of Fuels," *Planned Economy*), 1954, 7 (12), 787-94.
20. ANTONÍN MYNÁR, "O některých problémech tvorby velkoobchodních cen a dodržování cenové hladiny," *Podniková organizace* ("Concerning Some Problems of Wholesale Price Formation and of Maintenance of the Price Level," *Enterprise Organization*), 1957, 11 (5), 134-39.
21. VLADIMÍR NACHTIGAL, "Národní důchod a jeho výpočet v ČSR," *Politická ekonomie* ("National Income and Its Calculation in the Czechoslovak Republic," *Political Economy*), 1955, 3 (6), 440-62.
22. K. NOVOTNÝ, "Vývoj základních fondů v letech 1948-1957," *Statistický obzor* ("Development of Fixed Capital in the Years 1948-1957," *Statistical Review*), 1959, 39 (1), 11-18.
23. ORGANIZATION FOR EUROPEAN ECONOMIC COOPERATION, *General Statistics*, Nov. 1960.
24. ———, *General Statistics*, July 1961.
25. ———, *Industrial Statistics, 1900-1957*. Paris 1958.
26. B. P. PESEK, "Monetary Reforms and Monetary Equilibrium," *Jour. Pol. Econ.*, Oct. 1958, 64, 375-88.
27. MILOŠ PICK, "Vytvořit ekonomické předpoklady k dalšímu zkracování pracovní doby," *Planované hospodárství* ("For the Creation of Economic

- Conditions for Further Work Day Reduction," *Planned Economy*), 1959, 12 (3), 165-82.
28. FRANCIS SETON, "Soviet Progress in Western Perspective," *Soviet Stud.*, Oct. 1960, 12, 126-44.
 29. LADISLAV SMID, "Strojirenstvi a rozvoj vyrobnich sil ve treti petiletce," *Nova mysl* ("Machinery Industry and the Expansion of Productive Forces in the Third Five Year Plan," *New Mind*), 1960, No. 1, 25-38.
 30. G. J. STALLER, Czechoslovak Industrial Production, 1947-1957. Unpublished Ph.D. dissertation, Cornell University, 1959.
 31. STATISTISCHES BUNDESAMT, "Brutto-und Nettoproduktionswerte der Industrie im Jahr 1950," Sonderheft 7, and "Beschäftigung und Umsatz, Brennstoff- und Energieversorgung 1950 bis 1954," Sonderheft 9, *Die Industrie der Bundesrepublik Deutschland*.
 32. ———, "Die Industrielle Produktion 1949-1953," Sonderheft 5, and "Die Industrielle Produktion 1954 bis 1958," Reihe 3, *Die Industrie der Bundesrepublik Deutschland*.
 33. ———, *Statistisches Jahrbuch für die Bundesrepublik Deutschland 1960*. Stuttgart 1960.
 34. STATNÍ URAD STATISTICKÝ, *Statistická ročenka Republiky československé 1957*. (State Statistical Office, *Statistical Yearbook of the Czechoslovak Republic 1957*). Prague 1957.
 35. ———, *Statistická ročenka Republiky československé 1958*. (State Statistical Office, *Statistical Yearbook of the Czechoslovak Republic 1958*.) Prague 1958.
 36. ———, *Statistická ročenka Československé socialistické republiky 1960*. (State Statistical Office, *Statistical Yearbook of the Czechoslovak Socialist Republic 1960*.) Prague 1960.
 37. ———, *Statistický zpravodaj* (State Statistical Office, *Statistical Reporter*), 1949, 12 (5-6).
 38. STEPANEK, "K výpočtu plnění planu v remesle," *Statistický zpravodaj* ("Concerning the Calculation of Plan Fulfillment by Crafts," *Statistical Reporter*), 1949, 12 (11), 393-94.
 39. W. F. STOLPER, *The Structure of the East German Economy*. Cambridge 1960.
 40. MIROSLAV STRIBRSKÝ, "Výsledky patnácti let hospodarské spolupráce Československa a Sovetského Svazu," *Zahranicní obchod* ("Results of Fifteen Years of Economic Cooperation Between Czechoslovakia and the Soviet Union," *Foreign Trade*), 1960, 15 (5), 52-61.
 41. ROBERT SYKORA, "Dosavadní vývoj vzájemných hospodarských styků mezi CSSR a SSSR," *Zahranicní obchod* ("Up to Date Development of Economic Relations Between the Czechoslovak Socialist Republic and the Union of Soviet Socialist Republics," *Foreign Trade*), 1961, 16 (3) 3-6.
 42. JIRÍ TYPOLT, "K otázce metodiky tvorby cen," *Planované hospodárství* ("Notes to the Methodology of Price Formation," *Planned Economy*), 1957, 10 (9), 700-04.

43. O. ULMAN, "Nektere nedostatky v prumyslovych zavodech ve vykazovani hrube vyroby," *Statisticky obzor* ("Some Weaknesses in Reporting the Gross Value by Industrial Enterprises," *Statistical Review*), 1952, 32 (3-4), 223-25.
44. UNITED NATIONS, *Index Numbers of Industrial Production*. Lake Success 1950.
45. ———, *National and Per Capita Income in Seventy Countries*. New York 1949.
46. ———, *Statistical Yearbook 1960*. New York 1960.
47. JAN VONDREJC, "Planovani hrube vyroby a vyroby zbozi," *Planovane hospodarstvi* ("Planning of Gross Production and the Commodity Production," *Planned Economy*), 1953, 6. (5), 299-306.
48. VLADIMIR VLACH, "Nekolik poznamek k cs. indexu prumyslove vyroby," *Statisticky obzor* ("Some Notes Concerning the Czechoslovak Industrial Production Index," *Statistical Review*), 1950, 30 (3-4), 276-88.
49. JINDRICH VSETICKA, "Mereni produktivity prace v Ministerstvu paliv," *Planovane hospodarstvi* ("Measuring Labor Productivity in the Ministry of Fuels," *Planned Economy*), 1959, 12 (1), 69-73.
50. "Dekret Prezidenta Republiky ze dne 24. rijna 1945 o znarodneni dolu a nekterych prumyslovych podniku," cislo 100, *Sbirka zakonu a narizeni Republiky ceskoslovenske 1945* ("Decree of the President of the Republic, Dated October 24, 1945, Concerning the Nationalization of Mines and Certain Industrial Enterprises," No. 100, *Collection of Laws and Ordinances of the Czechoslovak Republic 1945*), and "Dekret Prezidenta Republiky ze dne 24. rijna 1945 o znarodneni nekterych podniku prumyslu potravinarskeho," cislo 101, *Sbirka 1945* ("Decree of the President of the Republic, Dated October 24, 1945, Concerning the Nationalization of Certain Enterprises in the Provisions Industry," No. 101, *Collection 1945*).
51. "Dlouhodobé problémy vyvoje zivotni urovne v CSR," *Planovane hospodarstvi* ("Long Range Problems of Development of Standard of Living in Czechoslovak Republic," *Planned Economy*), 1958, 11 (6-7), 532-45.
52. "Jeste k ukazateli hruba vyroba," *Statisticky obzor* ("The Indicator of Gross Value of Production Once Again," *Statistical Review*), 1956, 36 (4), 167-69.
53. "Usneseni strany a vlady o zavedeni nove metodiky sestaveni planu rozvoje narodniho hospodarstvi CSR ze dne 16. dubna 1952," ("Resolution of the Party and the Government Concerning the Introduction of the New Method of Drafting the Plan of Development of Czechoslovak Economy,") reprinted in: Statni urad planovaci, *Pokyny a formulare k sestaveni statniho planu rozvoje narodniho hospodarstvi CSR na rok 1953*. (State Planning Office, *Directives and Forms for Drafting the State Plan of Development of National Economy of the Czechoslovak Republic for the Year 1953*.) Prague 1952.
54. *Usnesenia strany a vlady o niektorych otazkach budovania socialistickeho hospodarstva*. (Resolutions of the Party and the Government Concerning Certain Questions of Creating a Socialist Economy.) Bratislava 1953.

55. "Vladni narizeni ze dne 10. dubna 1951 kterym se nove upravuji ukoly petileteho hospodarskeho planu," cislo 38, *Sbirka 1951* ("Government Ordinance Dated April 10, 1951, Readjusting the Tasks of the Economic Five Year Plan," No. 38, *Collection 1951*).
56. "Vladni narizeni ze dne 3. cervna 1953 o opatreni proti fluktuaci a absenci," cislo 52, *Sbirka 1953* ("Government Ordinance Dated June 3, 1953, Concerning Measures Against Labor Turnover and Absenteeism," No. 52, *Collection 1953*).
57. "Vladni narizeni ze dne 6. cervence 1953 kterym se zrusuje vladni narizeni ze dne 3. cervna 1953 o opatrenich proti fluktuaci a absenci," cislo 59, *Sbirka 1953* ("Government Ordinance Dated July 6, 1953, which Cancels the Government Ordinance Dated June 3, 1953, Concerning Measures Against Labor Turnover and Absenteeism," No. 59, *Collection 1953*).
58. "Vysledky diskuse o ukazateli hruba vyroba," *Statisticky obzor* ("Results of the Discussion Concerning the Indicator of Gross Value of Production," *Statistical Review*), 1956, 36 (5), 208-12.
59. "Zakon ze dne 9. kvetna 1947 o nekterych opatrenich k provedeni narodni mobilisace pracovnich sil," cislo 87, *Sbirka 1947* ("Law Dated May 9, 1947, Concerning Some Measures to Ensure National Draft of Labor," No. 87, *Collection 1947*).
60. "Zakon ze dne 28. dubna 1948 o znarodneni nekterych dalsich prumyslovych podniku a jinych podniku a zavodu," cislo 114, *Sbirka 1948* ("Law Dated April 8, 1948, Concerning Nationalization of Additional Industrial and Other Enterprises and Plants," No. 114, *Collection 1948*, and "Zakon ze dne 28. dubna 1948 o znarodneni dalsich prumyslovych a jinych podniku prumyslu potravinarskeho," cislo 115, *Sbirka 1948* ("Law Dated April 24, 1948, Concerning Nationalization of Additional Industrial and Other Enterprises in the Provisions Industry," No. 115, *Collection 1948*).
61. Zakon o tretim petiletem planu rozvoje narodniho hospodarstvi CSSR," *Planovane hospodarstvi* ("Law Concerning the Third Five Year Plan of Development of the National Economy of Czechoslovak Socialist Republic," *Planned Economy*), 1960, 13 (12), 881-94.

SIMULATION OF AN ECONOMY WITH DEVELOPMENT AND TRADE PROBLEMS

By EDWARD P. HOLLAND*

Economists cannot make laboratory experiments on national economic systems. If, however, we could devise and build a miniature national economy, complete in every detail, which behaved exactly like a real one but on a much-speeded-up time scale, and if we could adjust its parameters and then manipulate policies and exogenous events while recording time histories of its economic variables—then we could learn much by experimenting with it. By means of simulation with a computing machine, we can do something of that kind. Although we are forced by practical considerations to simplify the representation of the economy, using aggregate variables and omitting many details, we can, nevertheless, simulate and explore an economic-system model which behaves much more realistically than any model that can be dealt with by conventional analytic techniques.¹

The purpose of this article is to illustrate how the technique of simulation can be used to study problems of economic development and foreign trade policy for an underdeveloped country. Graphical and numerical results from a few computer runs are presented and compared to show how simulation might actually be used as an aid in formulating a development investment program.

These runs are a small sample selected from about 200 made during

*The author, while directing the project on which this article is based, was a research associate in the Center for International Studies at the Massachusetts Institute of Technology. He was assisted in the work by Benjamin Tencer and Robert W. Gillespie. The author is now associated with the Simulmatics Corporation of New York.

This work was financed jointly by the Center for International Studies and two other M.I.T. units: the Research Laboratory of Electronics and the Sloan Research Fund of the School of Industrial Management. An earlier analog simulation project, out of which this project developed, was financed by a grant from the Rockefeller Foundation. Assistance in making the transition to the digital computer, using the DYNAMO program, was rendered by the Industrial Dynamics Group of the School of Industrial Management. Services of an IBM 704 computer were provided by the M.I.T. Computation Center.

¹An over-all picture of the state of the art of simulation, with some of its history, rationale, methods, and typical applications, is given in a symposium of articles in the December 1960, *American Economic Review* by Orcutt [6], Shubik [9], and Clarkson and Simon [2]. Bibliographies with these articles cover a wide variety of simulations and background material, unfortunately omitting, however, the interesting analog work of A. W. Phillips [7] [8].

experiments on the model to be described. The parameters and initial values of variables in the model were based largely on the Indian economy as of 1951. The development programs and policies which were tried out on the model, however, were purely hypothetical and do not have any relation to actual experience or plans of the Indian government. No policy recommendations for India should be inferred from the results presented, because, for simplification, several considerations have been omitted which might be crucial for India. The work done was partly a process of developing a technique and partly a study of some hypothetical situations. Use of this method for policy guidance in real situations is a phase that is yet to come.

The objectives of a simulation study may include establishing a consistent and technically feasible development plan, exploring the effects of changes and alternatives in such a plan, and discovering what variables provide the best signals to tell how well the plan is succeeding or to warn of impending trouble. Other objectives include designing policy measures for handling problems that may originate either inside or outside the system, discovering what side effects are likely to be induced by any given policy, and finding out how to cope with such effects if they appear. For these purposes, simulation offers several advantages. It makes it possible to observe the dynamic interaction of aspects of the economy which are usually analyzed in isolation from each other, such as foreign trade, consumers' behavior, and investment decisions. It also permits comparatively realistic representation of all sorts of nonlinearities, discontinuities, time delays, and irreversibilities. Inclusion of such characteristics at the appropriate points is usually crucial for reproducing the modes of dynamic behavior that can occur in the real system.

I. The Economic System Model

In the description that follows the aim is to give a picture of the main features of the system; including fundamental assumptions about what elements of the structure are constant, which variables are exogenous and which are endogenous, and what sort of relationships control each of the main variables, with due attention to nonlinearities and other special characteristics. It would not be practical, in a short article, to describe such a complex model, or even a part of it, in equations, because it would require so many of them, with so much explanation, to be meaningful.²

An actual developing economy would be observed and analyzed in

² A complete specification, for those who want it, is included in [5]. Not counting about two and one-half chapters of introduction, it occupies 167 pages and takes more than 250 equations.

terms of the time histories of such variables as gross national product at current prices, real gross national product, consumers' price index, price indexes for various categories of goods, investment in various sectors, total investment, production from various sectors, imports of various types, exports, and the balance of payments.

The model described here was formulated with the aim of making the counterparts of these variables behave realistically under dynamic conditions. This meant representing underlying processes of adjustment pertinent to nonequilibrium situations rather than merely relationships which must exist between variables when they are in equilibrium.

Thus, for example, long-run supply curves were not used, because the relation between price and supply quantity at any future time will be affected by the particular paths along which some of the other variables move during the process of change and because the occurrence of a long-run type equilibrium is extremely improbable under the conditions for which the model was designed to be used.

Instead, very-short-run supply functions for the various sectors of the economy were formulated, with parameters subject to continuous change, reflecting changes in available fixed capital, prices of intermediate goods, wage rates, and labor productivity. A short-run supply curve for the product of one of the industrial sectors would look at a particular time like curve *a* of Figure 1. The part of the curve to the left of the kink is based on variable costs, with the assumption that only enough plants operate to produce the total output efficiently. To the right of the kink all plants are assumed to be operating at or above their normal output, and the price of their product is affected by scarcity. If net capital formation were carried out with no change in wage rates or intermediate-goods prices, the supply curve at some later time would have shifted horizontally to a position like *b*. (The lowering of the intercept on the price axis reflects increased productivity in new, technically improved plants.) If the same capital formation had been accompanied by a 50 per cent increase in wages and other prices, the short-run supply curve would have shifted to *c* instead of *b*.

The model includes six domestic production sectors, of which four have short-run supply curves similar to that described above. The four are power-using consumer goods manufacturing (Sector 1), capital and intermediate goods production (Sector 3), nonpower-using consumer goods manufacturing (Sector 4), and transport, communication, housing, etc. (Sector 5). In addition, the supply of output from agriculture (Sector 2) is assumed to be completely inelastic in the short run, and the supply of personal services (Sector P) is assumed

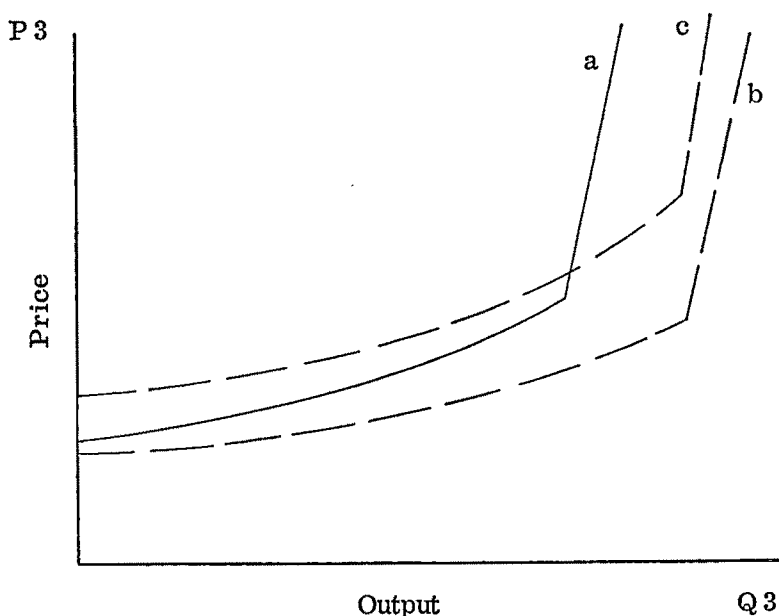


FIGURE 1. SHORT-RUN SUPPLY CURVES

to be perfectly elastic on any time scale. The model also has three sectors concerned with imports and exports (Sectors 6, 7, and 8).

Associated with each of the first five production sectors named above is a capacity-creating activity which can maintain or expand the sector's capacity or allow it to decay. At any given time decisions are being made about undertaking capital formation projects in each sector, both for replacement and for expansion. (The determination of these decisions is explained in Section II.) The units of productive capacity started during a particular time increment (the increments used were .05 year long), continue under construction throughout a gestation period and then become available to use for production. Factor payments and capital goods purchases, constituting investment expenditures, are determined at any time by the number of capacity units which are in the gestation process. The units of capacity completed and ready for production in a given time increment remain part of the sector's capacity throughout statistically distributed life spans. Thus, at any time, the rate at which old capacity is decaying, the rate at which new capacity is coming into being, the existing capacity, and the level of investment expenditure all depend on the past history of the rate of starting capacity-creating projects, and whenever this rate of starts is altered, the effects on investment and especially on capacity are delayed and smoothed out.

Demand for the product of any sector may be a combination of consumer's demand, demand derived from the current production of other sectors, and demand derived from capacity-creating projects. Not all of these are relevant to all sectors, however. The significant demand relationships are indicated diagrammatically in Figure 2.

Each block in Figure 2 represents a combination of several rela-

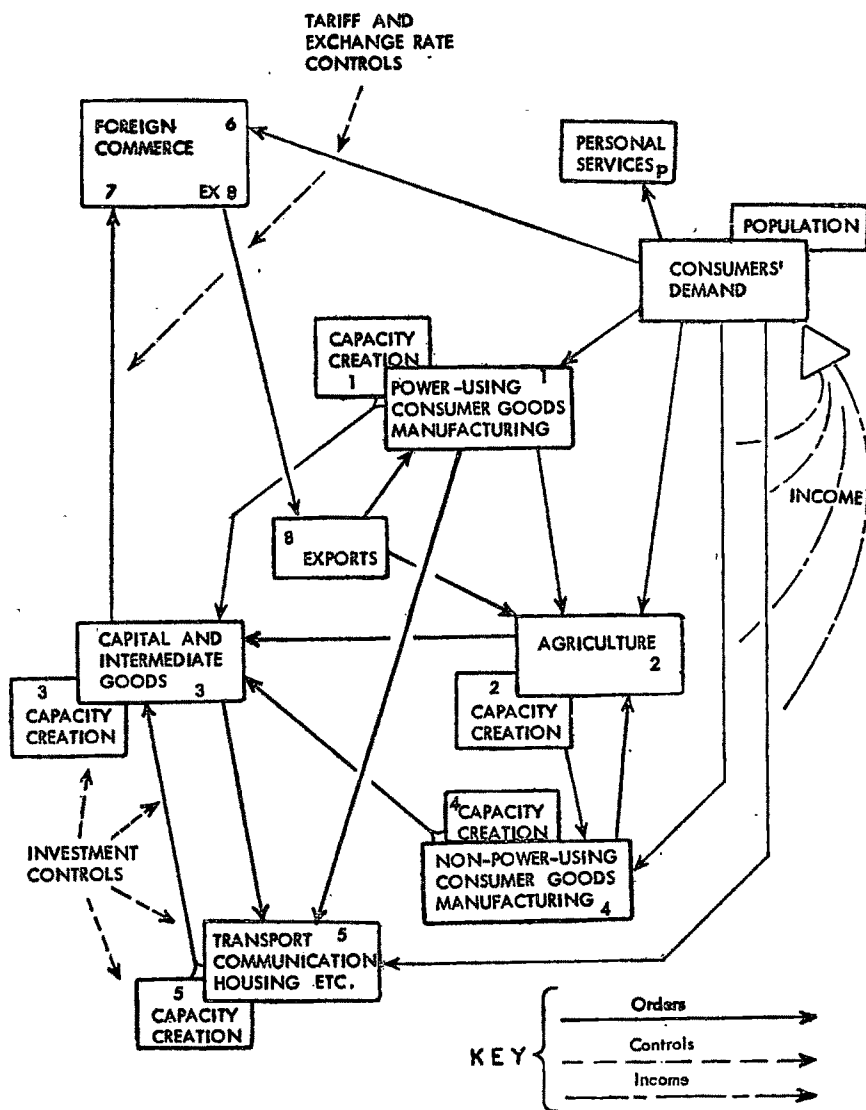


FIGURE 2. NATIONAL ECONOMIC SYSTEM DIAGRAM

tions, and each arrow represents an important signal from one group of relations to another (i.e., a dependent variable from one group entering another group as an independent variable). The block labeled "power-using consumer goods manufacturing," for example, stands for a price-determining function like the short-run supply curve of Figure 1, a function for evaluating the potential return on investment on the basis of current conditions, a wage-negotiation function, which responds to profits and in turn affects costs and the supply price, and a set of input-output coefficients (fixed in real terms) determining the demand by this sector for intermediate goods from other sectors. All of the relations implied in this block are related to current production in the particular sector (Sector 1).

Touching the block described above to indicate a high degree of interdependence is another block representing the capacity-creating activity and the capital life cycle for this sector. Arrows from the current-production block (Sector 1) to Sectors 2 and 5 indicate the demand for products of those two sectors induced by production in Sector 1. Another arrow, going to Sector 3, originates in both the production and capacity-creation blocks of Sector 1, indicating that products from Sector 3 are demanded in proportion to the level of capital-formation activity as well as in a different proportion to current output. For each demand arrow shown it would be appropriate to have a price arrow going the other way, since the prices of intermediate goods used in any sector affect that sector's production cost and hence its supply price schedule. Price arrows, however, have been omitted for clarity.

The export sector, Sector 8, has no production or capital formation and is merely an accounting relationship, combining products of Sectors 1 and 2 into a product-mix for export. The foreign commerce sector includes a fixed supply price (in foreign currency) for imported capital and intermediate goods, another price for consumers' imports, and a demand equation for exports. The price elasticity of export demand may be specified as desired for each run. Exchange rates and tariffs may be held fixed, made flexible, or manipulated in various ways.

The aggregate national income, earned by factors in production and capital-formation activities, is adjusted for taxes and business savings to determine disposable income, which, with a lag, becomes a principal independent variable of the consumers' demand function. The other independent variables are the prices of various goods, determined from the supply functions, and the population. Population grows exponentially at whatever rate is programmed, independently of other variables.

The consumers' demand function has characteristics of a classic multidimensional indifference map, determining the allocation of expenditures in response to income and prices. The per capita demand for food increases less than proportionately as per capita real income rises, in keeping with Engel's Law, while savings and the demands for other goods and for services increase more than proportionately. Various goods (including imported ones) are substitutable for each other at diminishing marginal rates. This demand function and the supply functions for the various consumer goods interact continuously to adjust prices as conditions change.

II. *Specifications for a Run*

Before going on to show how the economic-system model performed in a particular run, it is necessary to indicate what functions and constraints were included as aspects of policy, what variables were assigned exogenous values or time-paths, and what degrees of freedom were kept open.

A development plan was specified in terms of two sets of time-schedules. For Sectors 2, 4, and 5—agriculture, nonpowered consumer-goods production, and public overhead services (transport, communication, housing, etc.)—specific time-programs for starting capacity-creation projects were set up and rigidly followed. This does not imply that the enterprises in these sectors are necessarily government-operated, although some may be. The assumption is that it is government policy that determines the level of capital formation, but the actual investment may be carried out by private entrepreneurs. It has been observed in India, for example, that very little investment takes place in agriculture in regions where no government activity is carried out. Community development programs are an effort by the government to help and encourage villagers to undertake improvements in their facilities and in their methods. Irrigation dams and canals built by the government must, to be useful, be supplemented by local ditches and banks built by individuals or local groups. Thus the privately implemented activity tends to be determined by that of the government.

Development of the small-scale and cottage industries lumped together in Sector 4 is, in India, also induced largely by government incentive, even though the actual firms are privately owned. In Sector 5 there is a combination of private enterprises encouraged and regulated by government—such as part of housing—with purely government-owned utilities like power and railroads. For the purposes of this study we are not concerned with ownership, nor with the question of how control is effected, but only with the fact that in these three

sectors it is reasonable to assume that government policies control the rate of capital formation.

For Sectors 1 and 3—the modern industrial sectors producing respectively consumers' goods and intermediate and capital goods—time-programs were specified for the *minimum* rates of starting capacity-creation projects. These sectors have private investment decision functions based on profits, and it is expected that these endogenous mechanisms will often sustain higher rates of project starts than the minimums. However, in the event that starts in either of these sectors should fall below the levels specified, it is assumed that some action will be taken to stimulate them—perhaps direct government investment, perhaps financial incentives to private investment; again we do not identify the means of carrying out the policy but assume that some action can be devised that will prevent capital formation in each of these sectors from falling below the specified minimum at any time.

The private investment decision function in each of these two sectors is primarily a response to the profit rate, determined from the current market price and production costs in a new plant. This profit margin is reduced to a rate of return on the basis of the cost of building new capital facilities. Adjustments are made for overhead and financing costs and in some cases for optimism or pessimism of entrepreneurs. Near-future replacement requirements are taken into account, as well as the amount of new capacity already under construction but not finished. The outcome of all these considerations at any time is the rate at which private entrepreneurs want to start new projects in each sector. This will be the actual rate if it is above the scheduled minimum and below any ceiling that may be imposed.

Ceilings on the rate of starting capital projects were called for, under certain conditions in some runs, as measures to combat inflation or to reduce imports of capital goods. The means of effecting this control are not included in the simulation. They might be restriction of import licenses, direct limitation of construction, or indirect limitation through a tight money policy.

Besides the capital-formation profiles—definite ones for Sectors 2, 4, and 5, and minimum levels for Sectors 1 and 3—specifications of foreign-trade policy were included. The exchange rate was fixed, with no provision for changing it in this run. A tariff mechanism was set up to protect the capital-and-intermediate goods sector by raising the tariff on equivalent imported goods if any domestic capacity became idle. A tariff on consumers' imports was specified to be imposed in case of a crisis in the balance of payments (defined, for this run, as a current-account deficit greater than \$500 million per year). The tariffs were increased periodically if the situation for which they were

invoked persisted. A definite schedule was assumed for tapering off food imports during the first ten years as home production expanded.

Other assumptions were made, not as policies, but to tie down exogenous variables. The prices (in foreign currency) of imported goods of each type were set at fixed values, independent of quantity and without time variations. The demand for export goods was also devoid of time-trend or cycles but was made sensitive to price, with a value of -1.3 for the elasticity. Population was assumed to grow exponentially with a growth coefficient of .02 per year.

No limit was set either on credit financing of investment (government and private) or on the deficit on current account in the balance of foreign payments. This does not imply that projections of these deficits would not be major considerations in planning or that their actual magnitudes would be ignored in practice. The deficits are determined, however, by the operation of mechanisms which have already been fully specified. As a technique of investigation, they are left open-ended; the resulting inflation and the foreign-exchange deficit are among the criteria that will be used later in this article for comparing different runs.

III. *A Sample History*³

An economic history of the hypothetical country for a 20-year period is shown in Figures 3 and 4. This is part of the output generated in one computer run, referred to here as *Run A*. In addition to plotting the points through which these graphs were drawn, the computer tabulated values of about 80 variables by half-year intervals. (The computations were made at intervals of $\frac{1}{20}$ th of a year, approximating a continuous process, and involved many additional variables, but since it would not be worth while to record every step of the computations, selected values were actually tabulated only by half-year intervals.)

For this particular run a relatively intense program of investment in public overhead (Sector 5) was carried out, with considerable emphasis also on the capital and intermediate goods industries (Sector 3). Agriculture (Sector 2) was expanded enough to replace food imports and increase the food supply about 4 per cent per year, twice as fast as the population was growing. Relatively little emphasis was given to consumer goods manufacturing (Sectors 1 and 4). This program is of a type often advocated for starting a development process; similar programs are being followed in a number of developing coun-

³ Most of the time-history graphs that are presented in this and the next section are from Tencer [10].

tries. It is based on the theory that the low levels of public overhead capital and of capital-goods capacity are bottlenecks and that investment in those sectors will induce expansion of consumer goods manufacturing both by opening the bottlenecks and generating demand.

The real investment carried out in each sector is shown in the bottom part of Figure 3. In Sectors 2, 4, and 5, as explained above, these real investments were rigidly programed. In Sector 3, the profit-motivated level of investment rarely came up to the programed minimum; thus the latter almost always became the actual value. In Sector 1, on the other hand, the private investment induced by profit expectations was almost always above the low minimum set by the program.

With this investment program as prime mover, and with unlimited credit and foreign exchange, the gross national product in current prices increased dramatically—at an average rate of 7.5 per cent per year (see the middle part of Figure 3). A large part of this increase, however, was not growth of real output but only a rising price level. Even so, real gross national product, as shown, became more than $2\frac{1}{2}$ times as great in 20 years, an average growth rate of 4.8 per cent per year. Growth of real disposable income per capita averaged 2.8 per cent per year.

Gross investment is shown as a percentage of gross national product at the top of Figure 3. This percentage was a dependent variable, inasmuch as GNP was generated within the system while real investment was independently programed. Starting from about 10 per cent of national product at the beginning of the run, gross investment increased to 20 per cent in the middle of the run and then declined very slightly. Figure 3 also shows the annual rate of increase of the consumers' price index, which was in the neighborhood of 3 per cent per year throughout most of the run, and the balance-of-payments deficit on current account, to be discussed below.

Figure 4 shows the behavior of prices and wages, the changing pattern of consumption, and, at the bottom, the various components of foreign trade and the resulting balance on current account. Except in Sector 5, where capacity was very rapidly expanding, prices rose generally. Industrial wages rose even faster, partly because of increasing labor productivity in the industrial sectors. The price of consumers' imports, P6, was rapidly elevated by an almost continuous succession of tariff increases, intended to help improve the balance of payments.

The growth of consumption of different kinds of goods and services followed Engel's Law, in that expenditures on food, initially high,

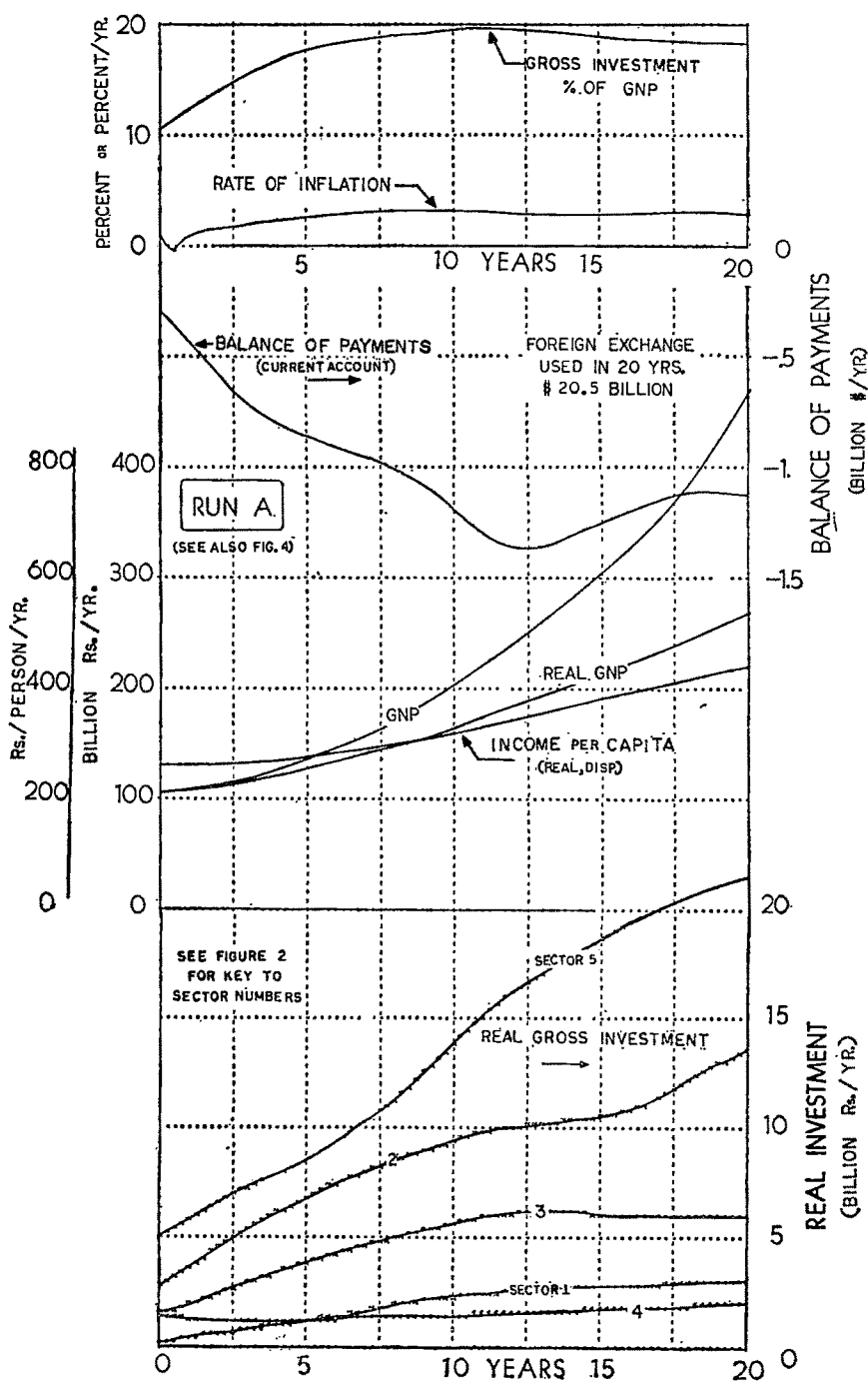


FIGURE 3. A SAMPLE HISTORY: PART OF RESULTS FROM RUN A

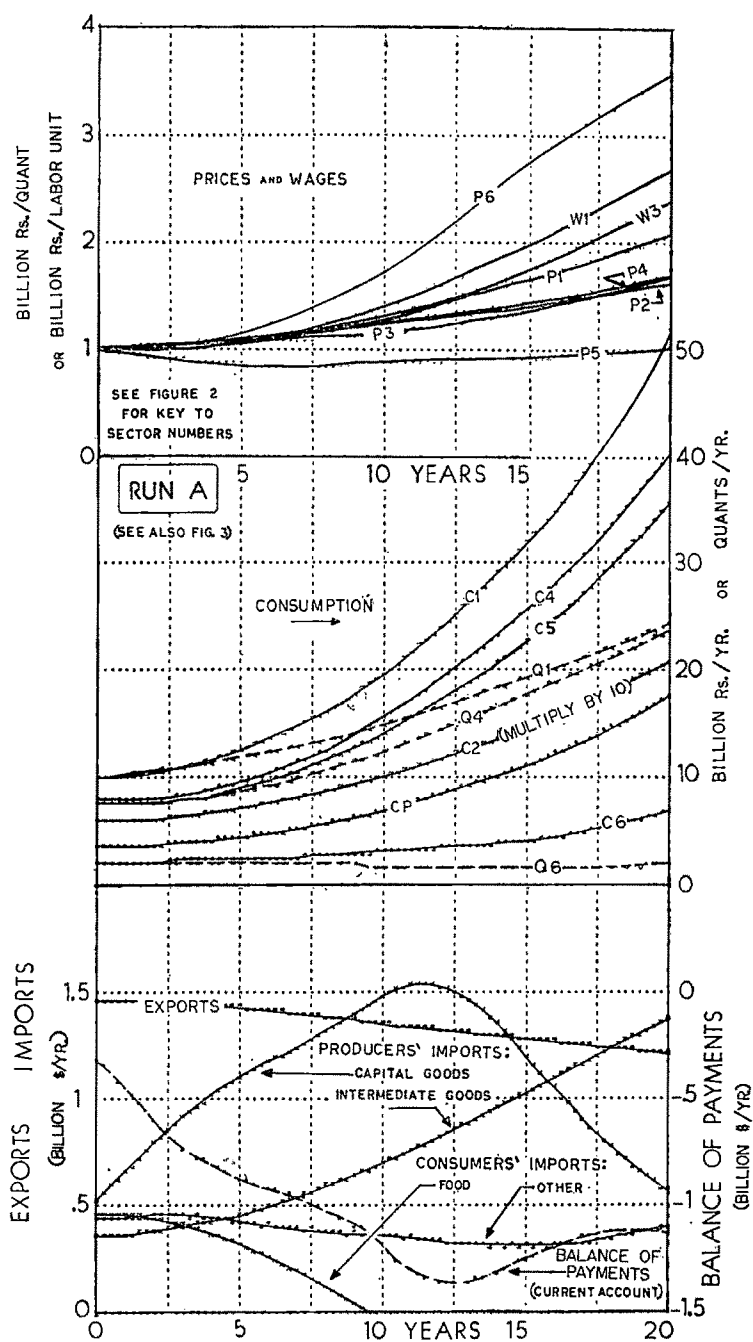


FIGURE 4. ADDITIONAL RESULTS FROM RUN A

grew less rapidly than other expenditures as per capita income grew. (This refers to basic foodstuffs; extra processing of food is in a different sector.) In addition to consumption measured in current values, the graph includes physical quantity indexes for industrial manufactures (Q1), small-scale and handicraft products (Q4), and consumers' nonfood imports (Q6). The choice among these three goods was relatively sensitive to price changes. Thus, as P1 climbed more steeply than P4, the consumption of Q4 caught up to that of Q1 (in terms of quantity). It is evident also that the ever-increasing tariff included in P6 was effective in holding down the quantity of Q6 consumed.

Although consumers' expenditures on nonfood imports, C6, doubled in 15 years and reached $3\frac{1}{2}$ times the initial value in 20 years, the increase went into tariff revenue and not into payments abroad. In the bottom panel of Figure 4, where the balance-of-payments components are shown, it can be seen that the expenditure abroad for consumers' nonfood imports was actually reduced during the first 15 years, and in spite of some increase thereafter was still below the initial value by the twentieth year.

Imports of food were gradually tapered off during the first $9\frac{1}{2}$ years as part of the program—not in response to market forces. Imports of capital goods rose rapidly during the first 12 years as required for the high rate of capital formation but declined thereafter as the domestic capital goods sector reached a sufficiently rapid rate of growth to begin taking over the supply. Imported intermediate goods, on the other hand, were assumed to be of types for which domestic substitutes were not developed within the 20-year period. Thus expansion of the economy induced ever-increasing imports in this category. With exports declining because of the rising price of exportable goods, and with imports of intermediate goods steadily rising, the import-replacement process in the food and capital goods sectors was not sufficient to bring the balance-of-payments deficit below the billion dollar a year level.

The initial assumption that this balance-of-payments deficit could be financed by long-term capital inflows is clearly open to question, not only because of the magnitude of the accumulated deficit over the 20-year span but also because even at the end of the 20 years the deficit continues at a rate of more than \$1 billion per year. The rate of inflation, too, while not catastrophic, might be considered undesirably high in itself (in addition to its adverse effect on foreign trade). Thus, although the investment program and other policies used in Run A produced a significant rate of economic growth, the results cannot be accepted as satisfactory. Let us then see whether the program can be modified to keep the price level from rising so fast

and to reduce the amount of foreign exchange used up by the deficit in the balance of payments.

IV. Effects of Some Changes in Plans and Policies

The simulation was repeated a number of times with a series of cut-and-try changes to help in understanding the dynamics of the system and to seek an improved plan for the allocation and phasing of investment and improved policies for control of foreign trade. The last of the further runs described here is by no means an optimal solution, nor is it in fact an adequate solution for the long run, inasmuch as another crisis is imminent at the end of the period considered. Nevertheless, these runs show some improvement and illustrate the process of investigation. What is lacking is simply further application of the same approach to arrive at a still more satisfactory policy combination.

Run B: Considering that the price inflation and heavy imports of capital goods in Run A are both associated with a high level of investment, it is appropriate to try cutting back the investment program to see what improvement might be made in price stability and the balance of payments and at what cost in growth of real output. Accordingly, Run B was made with about 20 per cent less investment in Sector 2 (agriculture), Sector 3 (capital and intermediate goods), and Sector 5 (public overhead). The main results from this trial are shown in Figure 5, together with the corresponding results from Run A and from other runs yet to be discussed. The less intense program, as expected, reduced the balance-of-payments deficit significantly by reducing capital goods imports. It is noteworthy, however, that the reduction in investment did not reduce the rate of inflation at all. In fact, the final value of the consumers' price index was actually a shade higher for Run B than for Run A (1.65 against 1.62). Evidently the slower growth of consumers' demand was offset by the reduced rate of expansion of supplies.

The reduction in investment, while ineffective in abating inflation, caused a significant loss in growth of output. Starting from 106 billion rupees per year initially, real gross national product grew in 20 years to 237 billion rupees per year in Run B, as compared with 270 billion rupees in Run A. This is an average annual growth rate of 4.11 compared with 4.78 per cent per year.

These comparisons, and others to come, are summarized in the table at the bottom of Figure 5.

Run C: An attempt was made to alleviate inflation by applying the following policy, leaving everything else as it was in Run B: Whenever the rate of change of the consumers' price index reached 3 per

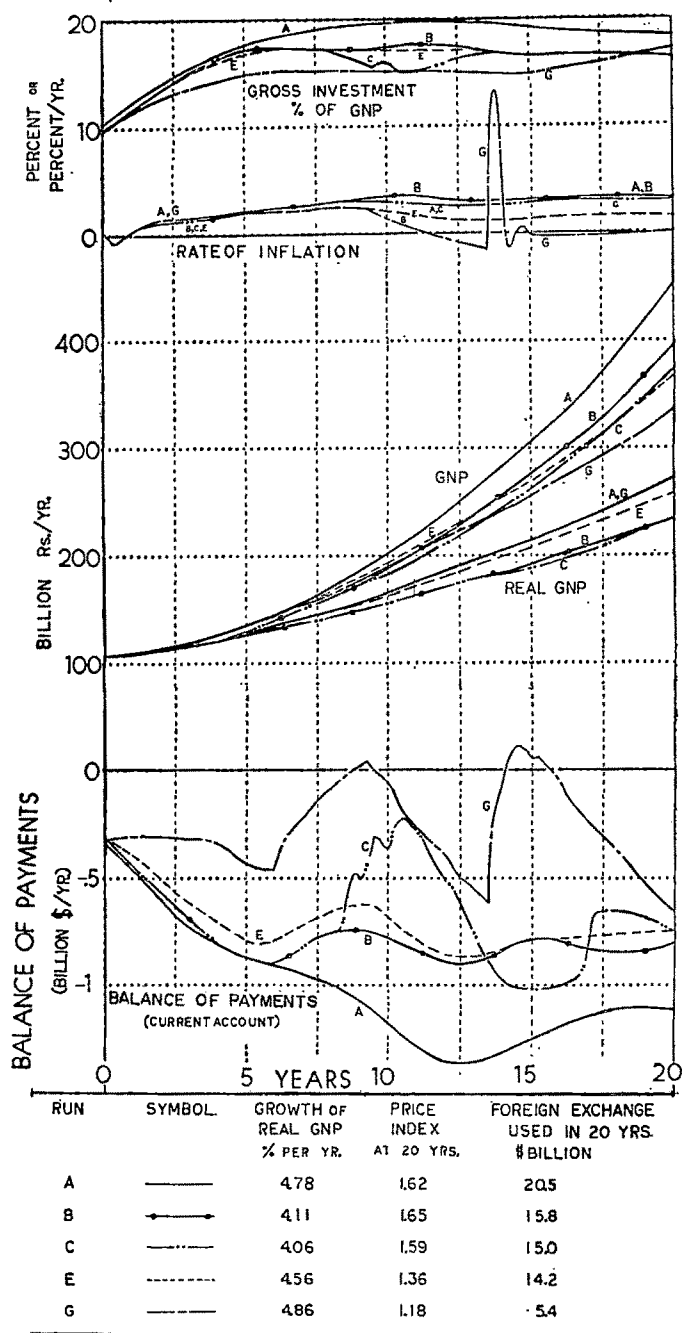


FIGURE 5. EFFECTS OF INVESTMENT PATTERN AND POLICY CHANGES

cent per year, the rate of starting new capital projects in the industrial sectors (1, 3, and 5) was curtailed until such time as inflation of the price index fell below 3 per cent per year, whereupon the program of Run B was resumed.

This policy was first invoked in Run C about $8\frac{1}{2}$ years after the start, when the inflation rate first reached 3 per cent per year. The resulting drop in investment is noticeable in the graph at the top of Figure 5, while in the one just below, it can be seen that the policy did indeed have the effect of reducing the rate of inflation to less than the chosen limit. This was not a major reduction, however, since it had not been very much above 3 per cent for much of the time in Run B. A slight drop in currently priced national product is noticeable, but real product was almost identical in the two runs. The most notable effect of this "anti-inflation" policy proved to be a reduction in the balance-of-payments deficit, through reduced imports of capital goods.

*Run E:*⁴ The fact that reducing industrial investment during part of Run C saved foreign exchange and slightly reduced inflation without significantly hurting real growth suggested that the investment pattern was too heavily biased toward the industrial sectors and that some gain might be effected by shifting emphasis away from some of them. Therefore Run E was programed with 10 per cent less investment in public overhead capital than Run C but with a 25 per cent increase in agricultural investment. The graphs and table tell the story: significantly less inflation, higher real output, and another \$800 million saving in foreign currency.

Run G: Between Run E and Run G a good many exploratory runs were actually made, and the program was changed in several respects. The investment pattern was changed further in the direction of less public overhead (Sector 5) and more agricultural expansion (Sector 2). The capital and intermediate goods program (Sector 3) was smoothed out a bit and built up a little earlier, while investment in nonfood consumer goods manufactures (Sector 1) was accelerated after the tenth year. Only in nonpowered consumer goods production was the program left unchanged. The new investment profiles (as they actually occurred, including some spontaneous investment) are compared with those of Runs A and E in Figure 6. The changes in the Sector 3 program, which were intended to smooth out the actual investment profile in that sector, did not have that effect, but instead simply changed the timing of the fluctuations in spontaneous investment.

As a measure to inhibit inflation, especially when a sudden policy change might set up a sharp transient stimulus (e.g., in case the

⁴ Runs D and F have been omitted from the sequence.

currency should be devalued), the time lag in the wage increase function was doubled, implying some sort of wage control policy. This change does not alter the equilibrium or target level toward which wages move under any given set of conditions but slows down their adjustment toward that target.

For the first 10 years this program gave a much better result than the previous ones (see Figure 5). Real gross national product grew faster, with less inflation, and with a diminishing balance-of-payments deficit. With the main emphasis on sectors requiring less capital goods, capital goods imports were eliminated after 9½ years, at the same time that food imports were phased out and just after the balance-of-payments deficit had been brought to zero.

At that point the character of the process changed abruptly. The abruptness resulted from the crudeness of approximations used in the

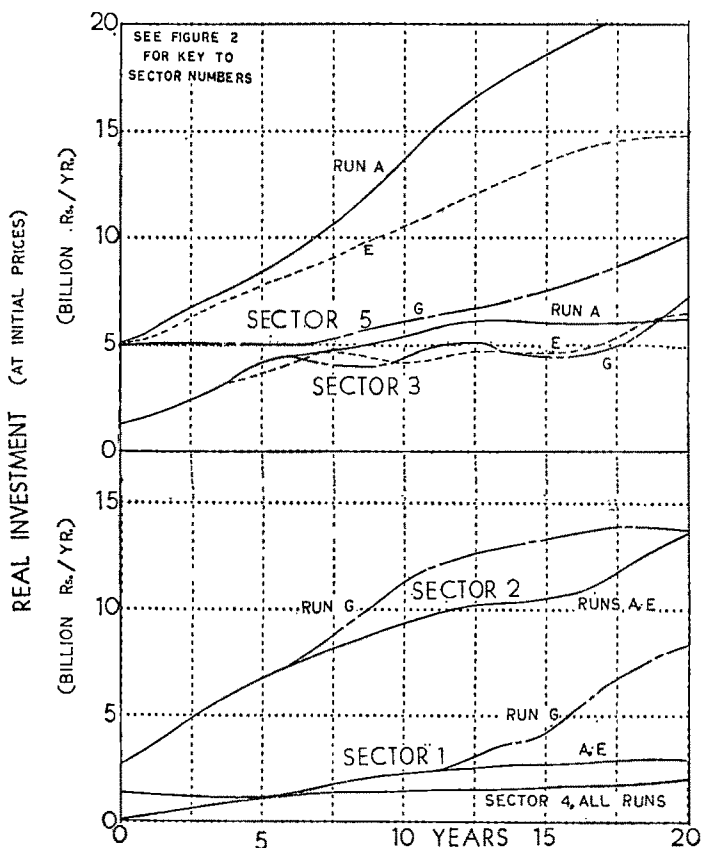


FIGURE 6. TIME PROFILES OF REAL INVESTMENT, RUNS A, E, AND G

model formulation, but the nature of the change is indicative of a problem that is actually of concern in some developing countries. That problem is the difficulty of indefinitely continuing the import substitution process. As more and more imports are replaced, the remaining opportunities become less and less attractive or feasible. In this model, the effect of this decreasing flexibility was roughly approximated in the nonfood consumer goods category by the diminishing marginal rate of substitution in the demand function. For either food or capital goods, however, import substitution remained perfectly feasible until all such imports, and therewith, of course, the substitution possibilities, were suddenly eliminated. The resulting shock was enhanced in this run by the accidental simultaneity of this event in the case of both food and capital goods imports.

Before the elimination of these imports $9\frac{1}{2}$ years from the start of the run, a favorable trend in the balance of payments had been established by the reduction of these imports faster than imports of consumer goods and intermediate goods were increasing. (Exports were hardly changing.) Afterward, the continuing increase in consumers' and intermediate imports rapidly built up a new balance-of-payments deficit.⁵ The ending of the import-substitution process affected consumers' prices favorably, largely because the rate of expansion of agriculture was maintained, with all of the increase being added to the supply instead of some being offset by reduced imports. Not only was inflation checked but from the twelfth year on the consumers' price index even declined.

By the time the current-account balance-of-payments deficit had grown from zero to \$600 million per year in four years, and was still increasing at about the same rate, it seemed time for some drastic countermeasures. Several experiments were tried, only one of which is reported here. When the deficit reached \$600 million per year ($13\frac{3}{4}$ years from the start), the currency was devalued so that 50 per cent more rupees were required in exchange for a dollar, and at the same time a 20 per cent tariff was imposed on consumers' imports.

The short-run impact was an improvement in the current account of \$750 million per year, as seen in Figure 5. Of the total, \$600 million was from reduced consumer-goods imports and \$150 million from

⁵ Of course, it is just as unrealistic to assume no substitution possibilities for intermediate goods as to assume the possibilities are perfect for capital goods. Undoubtedly these features can be improved in a future model. However, except for the sharpness of the discontinuity, these approximations compensate each other to some degree. It is not the object of this article to draw general conclusions but to illustrate a technique of investigation.

increased exports. This improvement may be regarded as permanent, relative to the deficit that would otherwise have developed if it could have been financed and allowed to grow indefinitely. A more realistic interpretation, however, is that a crisis was impending and was deferred for a few years by the devaluation. Although the balance of trade deficit was greatly reduced, its rate of growth was not affected, as can be seen by comparing the slopes of the balance-of-payments graph of Figure 5 for the periods before and after the devaluation (before year $13\frac{1}{2}$ and after year $14\frac{1}{2}$). By the twentieth year the deficit had reached \$700 million per year and showed no sign of leveling off.

This illustrates the need for some action outside the range of the assumptions used thus far in the investigation. With the fixed export demand scheduled assumed in these runs, and the requirement of intermediate-goods imports in proportion to the growing output of a domestic industrial sector, there is really no way to stabilize the trade balance, even if all consumer and capital goods imports are cut off. Although the limitations assumed are reasonably realistic for some countries at some stage in their development, they cannot be tolerated in the long run and must somehow be overcome.

With the assumed limitations, as long as growth is successfully maintained, measures acting through price effects (i.e., tariffs and devaluation) give only temporary relief. To effect a more permanent improvement it would be necessary either to develop domestic substitutes for all imports and work toward autarky or to expand export demand through successful promotional campaigns abroad and the development of production of new export goods. Attempts to solve the balance-of-payments problem without such measures may be observed in some real countries; perhaps this simulation helps to show why they seldom succeed.

Although it ended with a problem still to be solved, Run G was on several counts an improvement over the previous ones. The growth of output was a little faster than in Run A, and significantly faster than in the intervening runs, while the over-all rise in the price index was the least, and the total drain on foreign exchange reserves was only a fraction of that in the other runs. (See the table in Figure 5.) On the other hand, the slower accumulation of industrial productive facilities left the economy at the end of the run less well equipped for future expansion.

The great improvement made by reducing investment in public overhead capital could mean either of two things: It could mean that the original program was actually too heavily slanted toward public overhead capital. More plausible, however, is the possibility that the

assumptions about requirements for overhead services were not realistic. A large part of the output of this sector, according to our statistical sources, was used by consumers. The assumption that their demand for these services (including housing) was neutrally price-elastic should surely be questioned. Also, it might be desirable to subdivide the sector into services primarily for industries and those primarily for consumers.

V. Concluding Observations

From the series of examples presented here it is apparent that an evaluation of policy alternatives for an actual situation could well involve scores or even hundreds of runs, depending on the problem addressed, the freedom available for variations in different dimensions of policy, and the degree of certainty with which the economic system structure is known. Obviously no substantive conclusions could be drawn from these few runs. In fact, critical consideration of the results led to questions about the validity of assumptions underlying the balance-of-payments problem and the requirements for public overhead services, and to suggestions for trying to improve the formulation.

There is, of course, nothing unique about simulation that makes its results more dependent on assumptions than any other method. The assumptions in such a model as this are so explicit and so numerous as to emphasize the dependence. It is less noticeable in more simplified analyses where it is implicitly assumed that all sorts of things can simply be omitted from the model, but it is no less limiting. A simulation study easily can, and always should, include tests of the effects of changing questionable assumptions or parameter values, at the same time developing ways to make the success of policies relatively insensitive to such changes.

It is not to be expected that simulation, using an approximate model whose parameters are not precisely known, will produce an accurate forecast for a 10-, 20-, or 30-year period. Apart from shortcomings of the model, events exogenous to the real system may easily start cumulative processes leading to major deviations from what was otherwise the most probable outcome, so that no technique can yield reliable predictions. The purposes of a simulation study are to learn about possible problems and how to cope with them, and to make long-range projections for a variety of contingencies, in order to provide perspective for working out shorter range policies. Like an itinerary for a long trip, a long-run plan should be subject to revision whenever new knowledge or new opportunities warrant, or whenever unexpected obstacles arise. At any time it is desirable to have some

vision of long-run goals, as well as more detailed targets for the shorter run together with plans for attaining them. Thus a 20-year projection provides a frame of reference within which to work out a 5-year plan, so that the 5-year planners will not, for example, under-rate worth-while projects that take 6 years to become productive.

Either for working out development plans or for devising measures to deal with particular dynamic problems, simulation offers some powerful advantages over other techniques. One is the capability of handling a relatively complete system—one which provides for dynamic interactions between aspects of the economy that are usually analyzed in isolation from each other. The value of this is illustrated by some not entirely obvious conclusions from a study of exchange-rate devaluation which was made by Robert W. Gillespie [3] using this same model. He found that for this model and the assumed conditions the most important determinants of the effectiveness of devaluation were not the frequently analyzed elasticities of demand but the induced effects on the pattern of investment allocation and the resistance of the system to inflation of prices. The resistance to inflation, in turn, proved upon further testing to be very sensitive to the speed with which consumers adjust their expenditures to changes of income.

These results cannot, of course, be taken as general, being based on a partial survey of a particular model. However, they do make it clear that some of the most innocent-appearing *ceteris paribus* assumptions can be treacherous, and that exchange-rate policy had better not be decided purely on the basis of comparative statics. Far-sighted theoreticians and policy-makers have already described the processes involved here and how they pertain to the effectiveness of a devaluation [1] [4]. But until the development of simulation, the means of exploring the problem fully have been lacking, and little has been done about it on the theoretical level beyond discussion.

As compared with maximization techniques, simulation permits a clearer separation of the technical investigation from the defining of policy objectives. No formal welfare function or over-all performance index is needed in the analysis itself. Thus it is not necessary to formulate value judgments in a vacuum before observing the effects of alternative policies. Since the effects show up as changes in such incommensurable criteria as the time profiles of income, employment, and prices and the stability of the foreign exchange rate, any such formulation is extremely dubious. A better approach is to choose among alternative outcomes in terms of all of their dimensions. With simulation this can be the final step and can be done, if desired, by decision-makers other than the experimenter.

The formulation of the model for a simulation study is crucial and requires extensive research and good judgment. The techniques of computer programming have developed to such a point that almost anyone can set up some kind of a model and—after some initial difficulties—get it to work. The results, however, may be thoroughly misleading if the model does not correspond suitably to what it is supposed to represent. The importance of careful formulation of the model applies both to its qualitative structure and to the numerical magnitudes involved. Actually a good deal of insight can be gained—as has often been done with engineering systems—by experimenting with a model with the right qualitative features, such as nonlinearities and time lags, even without much knowledge of the numerical values of the parameters. At least, from such a hypothetical study one can learn what modes of dynamic behavior are possible and which parameters are critical in determining which mode will prevail.

In problems of dynamics it is probably more important to have these qualitative features represented in the right places than it is to have accurate numerical estimates of the parameters. It is not even clear what is meant by the idea of highly accurate estimates of the parameters of a model which is qualitatively wrong. On the other hand, many issues hinge on the quantitative values of parameters. Without some reasonably reliable statistical estimates we are likely to find that certain policy choices simply cannot be made one way or the other. Without some knowledge of the orders of magnitude of the quantities we are dealing with, it is not even possible to formulate a good model qualitatively, for any model must be a simplification, omitting many aspects of reality, and we need some basis for judging what can safely be omitted. It is not great precision but reliable approximations that are needed.

Simulation thus is no substitute for empirical research. In fact it sharpens the need both for statistical information and for accurate descriptions of relationships and dynamic processes. With models carefully formulated from such foundations, the possibilities for increasing our understanding of economic dynamics in general and for developing workable policies for particular situations are great.

REFERENCES

1. S. S. ALEXANDER, "Effects of a Devaluation," *Am. Econ. Rev.*, March 1959, 49, 22-42.
2. G. P. E. CLARKSON AND H. A. SIMON, "Simulation of Individual and Group Behavior," *Am. Econ. Rev.*, Dec. 1960, 50, 920-32.
3. R. W. GILLESPIE, *Simulation of Economic Growth with Alternative Balance of Payments Policies*, Ph.D. thesis, Massachusetts Institute of Technology, Cambridge 1961.

NEW CONCEPTS CONCERNING FUTURES MARKETS AND PRICES

By HOLBROOK WORKING*

Research on futures markets during the last 40 years has produced results that have required drastic revision or replacement of a great part of the previously accepted theory of futures markets and of the behavior, not only of futures prices, but of the general class of prices that may be called "anticipatory." New light has been thrown on the behavior of businessmen, including speculators, and on the functioning of the price system.

To say that new theory has been required poorly expresses the consequences of the research, because the main results have not been "theory" in the usual economic sense of that term. One may better follow an example set by Conant when he faced a similar problem in undertaking to explain the nature of science, and said, "... science emerges from the other progressive activities of man to the extent that new concepts arise from experiments and observations, and the new concepts in turn lead to further experiments and observations" [4, p. 24]. The chief result of the research to be considered here has been the emergence of a series of new concepts arising from observation and statistical analysis. They are listed in Table 1, with a parallel statement of the concepts that they partially or wholly displace, and their emergence is traced in succeeding sections of the paper, where the main evidence on which the new concepts rest is summarized.

Empirical research has played a leading role in the advancement of economic knowledge and understanding that is described here, but the role has been a different one than economists have ordinarily thought that such research would play in advancing their science—if economics be a science.¹ In the final section below we re-examine some prevalent views on the function of empirical research in economics,

*The author is associate director emeritus of the Food Research Institute, Stanford University. This paper is a revision of one given, under the same title, at the annual meeting of the American Economic Association, December 22-30, 1960, an abstract of which appeared in *Am. Econ. Rev., Papers and Proceedings*, May 1961, pp. 160-63. The author is grateful for a grant from the Rockefeller Foundation that has assisted preparation of this revision.

¹Most natural scientists, including Conant [4, pp. 26-27], have felt during at least the past half century that economics did not fully qualify as a science. Conant [4, pp. 118-19] reserved judgment on the possibilities of economics becoming a science.

TABLE 1—CONCEPTS CONCERNING FUTURES MARKETS

New Concepts*	Displaced Concepts
1. <i>Open-Contract Concept:</i> Futures markets serve primarily to facilitate contract holding (1922).	Futures markets serve primarily to facilitate buying and selling. (Disproved.)
2. <i>Hedging-Market Concept:</i> Futures markets depend for their existence primarily on hedging (1935; 1946) ^a .	Futures markets depend for their existence primarily on speculation. (Disproved.)
3. <i>Multipurpose Concept of Hedging:</i> Hedging is done for a variety of different purposes and must be defined as the use of futures contracts as a temporary substitute for a merchandising contract, without specifying the purpose (1953).	Hedging is done solely to avoid or reduce risk. (Disproved.)
4. <i>Price-of-Storage Concept:</i> Storage of a commodity is a service supplied often at a price that is reflected in intertemporal price spreads, and because the holding of commodity stocks can afford also a "convenience yield," the price for storing small stocks is often negative (1933; 1949).	Storage of a commodity is a service that is supplied only in response to an assured or expected financial return equal to or greater than the cost, the latter calculable ordinarily without regard to the quantity of stocks to be stored. (Disproved.)
5. <i>Concept of Reliably Anticipatory Prices:</i> Futures prices tend to be highly reliable estimates of what should be expected on the basis of <i>contemporarily available information</i> concerning present and probable future demand and supply; price changes are mainly appropriate market responses to changes in information on supply and demand prospects (1934; 1949).	Futures prices are highly unreliable estimates of what should be expected on the basis of existing information; their changes are largely unwarranted. (A wholly unproved inference; accumulating evidence mainly supports the new concept.)
6. <i>Market-Balance Concept:</i> A significant tendency for futures prices to rise during the life of each future is not uniformly present in futures markets, and when it exists is to be attributed chiefly to lack of balance in the market (1960).	Aversion to risk-taking, leading to risk premiums, produces a general tendency toward "normal backwardation" in futures markets, statistically measurable as a tendency for the price of any future to be higher in the delivery month than several months earlier.

* Dates shown in parentheses are years in which the concepts may be said to have emerged. Where two dates are shown, the earlier one is the date of publication of evidence recognized as challenging the older concept; the later date, that of first-known publication of at least the substance of the new concept.

^a A statement of this concept was first prepared for publication by H. S. Irwin about 1946, but actual publication was delayed until 1954 (see below, pp. 435-36).

and conclude that such research can serve economics in the same way that Conant describes it as serving the natural sciences.

The practical question of economic usefulness of futures markets is only incidentally referred to in the present paper, inasmuch as our concern here is to trace the advance of economic understanding rather than to discuss the practical uses of such understanding. It will be readily observable, however, that the improved understanding contributed by each of the new concepts except the first, which bears only on the technical question of correct measurement, tends either toward refuting common criticisms of futures markets or toward indicating greater usefulness than has ordinarily been attributed to them, or both.

I. The Open-Contract Concept

First of the six new concepts to emerge, and a necessary precursor of much that was to follow, was the concept that the business of futures markets should be measured primarily in terms of volume of contracts outstanding—so-called “open contracts.” This was a revolutionary concept, carrying with it recognition that the traditional main function of markets, transfer of ownership, is not a significant function of a futures market. In futures markets there is little buying and selling in the usual sense, with its connotation of transfer of ownership. Instead, futures markets exist chiefly to facilitate the holding of contracts; the making and offsetting of those contracts, misleadingly called buying and selling,² is only incidental to the main function of such markets.

The revolutionary character of this concept was so little recognized at the outset that the concept was accepted in its original form without controversy,³ and without explicit record of who deserves credit for

² Futures contracts, used chiefly as purely financial rather than as merchandising contracts, are executed under terms that provide explicitly for settlement by financial transfer rather than by any transfer of commodity ownership (though allowing the latter as an alternative means of settlement). If the execution of such contracts went under an appropriately distinctive name instead of being called “buying and selling,” people would not so often think it a perversion of sound business practice that transfer of commodity ownership occurs only infrequently under those contracts. In fact, it is excessive forcing of settlement by transfer of commodity ownership, in connection with corners and squeezes, that is a perversion of the use of futures contracts.

³ This was probably because of the evident significance of open contracts for the theory of hedging, and because initial acceptance of the importance of open contracts did not require granting open contracts a central position in consideration of futures markets, such as they were eventually to command, but only granting them attention. Collection of the data on open contracts was indeed opposed by those who sought to avoid the expense entailed in supplying data, and even more vigorously opposed on the ground that the statistics of open contracts revealed information that, it was alleged, should not be made public. The latter contention, it should be noted, implied recognition of the pertinence of the data to study of market functioning.

the innovation. The concept emerged effectively about 1922 during consideration of what data should be collected by the newly-created Grain Futures Administration. Credit for it belongs chiefly, I think, to J. W. T. Duvel, who was shortly to become the first administrator of that federal agency, and during his long occupancy of that position gave research a prominent place in the work of that regulatory body.⁴

Directing attention to open contracts in the study of futures markets had an effect similar to that produced on the study of medicine and related science by Pasteur's discovery of bacteria; it led to study of the *causes* of phenomena, and thus toward true understanding, where previously only symptoms had been considered and understanding had been frustrated. And, incidentally, terms new to economics were required, such as "long position" and "short position" and "long hedging" and "short hedging."

The main fruits thus far of adoption of the open-contract concept have flowed from the fact that it led to quantitative study of hedging, which was obviously not significantly measurable in terms of trading statistics. It thus led directly to a new understanding of the parts played by hedging and speculation, respectively, in the origin and functioning of futures markets—a new understanding reflected in the hedging-market concept to be considered next; and it contributed significantly to emergence of the multipurpose concept of hedging. Studies of speculation have not benefited so much from the open-contract concept, partly at least because persistence of the mistaken idea that speculation is well measured by trading has considerably retarded study of speculation in terms of open contracts; but studies of the statistics of open contracts, as we shall see in the next section, have recently raised questions that bear especially on speculative behavior.

II. *The Hedging-Market Concept*

Futures markets have usually been regarded, in the past, as essentially *speculative* markets. Although they rather early won recognition as useful for hedging, their hedging use was treated as a fortunate by-product, neither necessary to the existence of such a market, nor

⁴ The decision to collect statistics of open contracts is recorded in [50, p. 691]. Preparation of the Federal Trade Commission's monumental *Report on the Grain Trade* was then in progress and economists of the Commission, promptly adopting the idea that open contracts should be studied, undertook compilation of open-contract data for some earlier years [51, Vol. 7, pp. 8-89, 124ff.] W. H. S. Stevens, who, with Francis Walker, was in general charge of the Federal Trade Commission inquiry, has told me that G. P. Watkins, of the Commission Staff, may have been responsible for the idea that statistics of open contracts should be collected; but the fact that Watkins, instead of presenting an argument of his own for use of open-contract statistics, quotes Duvel on the subject [51, Vol. 7, p. 134] leads me to think that principal credit belongs to Duvel.

very closely related quantitatively to the amount of speculation on the market. At Chicago, where dealings in forward contracts first took on the essential characteristics of a modern futures market, dealing in futures was initially regarded in the grain trade itself as a disreputable speculative business; for more than a decade the Chicago Board of Trade refused to allow such transactions in its quarters.⁵ The opinions of economists are reflected in familiar treatments of the theory of futures markets that begin by supposing the only participants in the market to be speculators.

The first step toward a radically altered view of futures markets came with the discovery of what might justly be called Irwin's Law. After statistics of open contracts had been collected by the Grain Futures Administration for only a few years, a staff member of that agency, H. S. Irwin, noted that the volume of open contracts varied seasonally in accordance with seasonal changes in the volume of commercial stocks subject to hedging [16]. Irwin was not then willing to conclude that speculation tended to enter and leave a market in direct response to variation in the amount of hedging, and sought explanation otherwise.⁶ Hoffman [11, pp. 33-41] later studied additional evidence on the correspondence between commercial stocks and open futures contracts, and found it observable in year-to-year variations as well as within the year. With the aid of statistics of hedging, available for the last three years of the period that he studied, he brought to light the fact that the net amount of hedging (short minus long), which he supposed was the hedging variable logically to be considered, did not always vary in close correspondence with commercial stocks.

Presently Irwin undertook a study of the origins of futures markets in butter and eggs, taking advantage of the fact that there were then people still alive who had witnessed the early stages of emergence of futures markets in those commodities. Verbal accounts by such people, supplemented by extensive study of contemporary published information, convinced Irwin that the prime incentive to emergence of those futures markets came from hedgers rather than from speculators. This conclusion, though consistent with the statistical evidence noted above, ran contrary to an established belief, and Irwin was unable to get publication for his original paper. By the time he resorted to private

⁵ Irwin [17, pp. 69ff] dates futures trading in Chicago from near the beginning of the 1850's, and my reading of Taylor's *History* [28] leads me to a similar conclusion. Dealings in futures were first admitted to the Chicago Board of Trade in 1865 [28, Vol. 1, p. 331].

⁶ His suggestion was that the seasonal increase in amount of speculative buying of wheat at harvest time "arises chiefly from the wheat-growing sections tributary to each market, and that it is done largely when the wheat is sold," and he was able to cite some evidence in support of the hypothesis [16, p. 45]; but the hypothesis subsequently proved inadequate to account for the observed facts.

publication in 1954, in expanded form [17], the present writer had profited from a reading of Irwin's original manuscript in 1946, had found that his conclusion conformed with a great and varied mass of other information, and had argued that futures markets ought not to be regarded as primarily speculative, but as primarily hedging markets [40, pp. 318-19]⁷ [42].

The statistical data on hedging and speculation, as they accumulated, produced evidence that the relationship was not a simple one connecting speculation with net hedging, as it had seemed natural to assume. Statistical analysis presently revealed that long hedging serves only in part to offset short hedging, and in part creates a need for short speculation. With this circumstance taken into account, the amount of speculation was shown to vary in much closer correspondence with the amount of hedging than had been evident previously. Chart 1 illustrates the correspondence found for variations through time in one market.^{7a} A similarly close correspondence was found for variations between markets, using five-year averages [48, p. 198].

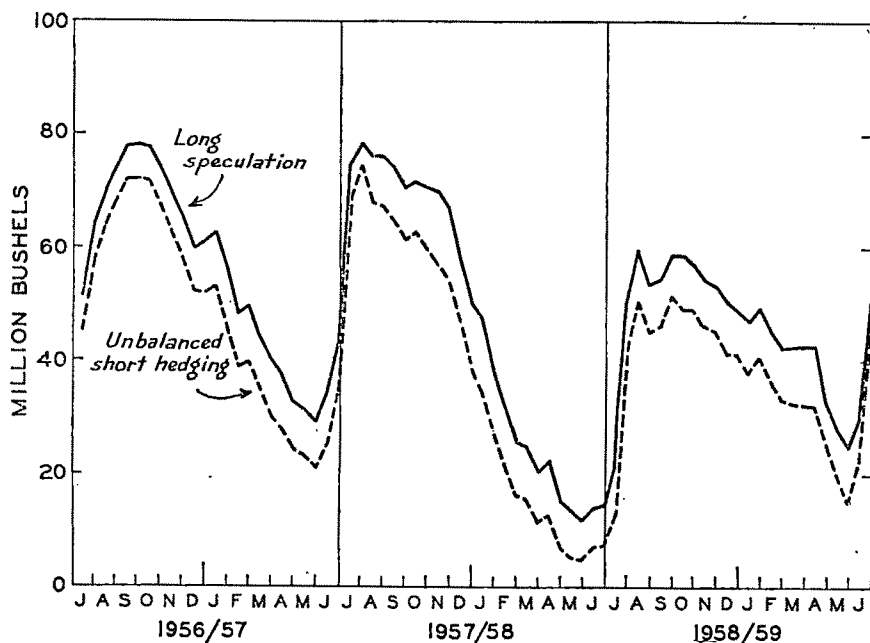
III. *The Multipurpose Concept of Hedging*

According to the traditional concept, hedging consists in matching one risk with an opposing risk, and hedging in futures is effective because changes in spot prices of a commodity tend to be accompanied by like changes in the futures price. The fact that hedging usually involves more than risk avoidance has long been known to hedgers themselves and to some economists. Wiese, a businessman, seems to have been the first person to criticize the traditional concept as seriously misleading [32, p. 113]. An attempt by Graf [8] to test the efficacy of hedging produced the first evidence which was recognized

⁷ Inadvertent omission from that paper of due credit to Irwin was corrected in [44].

^{7a} Further research seeking interpretation of the evidence in Chart 1 has led the author to two conclusions that deserve to be noted, though they cannot be elaborated, here. The estimation procedure used to arrive at the data for the chart assumes fairly complete reporting of hedging, both short and long, and in the absence of that condition tends to produce a spurious degree of stability in the ratio between estimated amounts of long speculation and of short hedging, hence to exaggerate the closeness of response of speculation to hedging. The condition for reliability of the estimates in this respect is probably better met for wheat than for any other commodity, and is met best in periods when the amount of short hedging is large. Secondly, theoretical study of the mechanism by which one may suppose that the adjustment between amounts of speculation and of hedging is accomplished seems to make the concept of incomplete balancing between short and long hedging appropriate theoretically only in connection with comparatively long-time adjustments; its use in the accompanying chart to exhibit evidence on short-time adjustment is then to be regarded as only a graphic device. Statistical analysis of the data on lines that now seem theoretically appropriate have shown a degree of correspondence between estimated amounts of speculation and of hedging broadly similar to that indicated in the chart above.

CHART 1. EVIDENCE THAT CHANGES IN AMOUNT OF LONG SPECULATION OCCURRED CHIEFLY IN RESPONSE TO CHANGES IN AMOUNT OF UNBALANCED SHORT HEDGING, WHEAT, JULY 1956-JUNE 1959* (million bushels)



* Data from [48, p. 208] and like data for month-ends. Unbalanced 'short hedging' is the total of open short-hedging contracts, less an appropriate fraction of open long-hedging contracts.

as showing that the simple risk-avoidance concept was seriously misleading to economists [41, pp. 544-45].

Quantitative studies, perhaps surprisingly, have contributed more to understanding of hedging than have verbal inquiries concerning business motivation. Particularly noteworthy among these were studies of the quantitative relation between hedged stockholding and market "carrying charges," which brought recognition that much hedging was done to assure profits, not merely to avoid risk [41, pp. 556-57]; studies of flour-mill practice in maintaining a rough inventory balance involving the three items, physical stocks, forward merchandising contracts, and futures contracts [41, p. 549], which produced evidence that risk avoidance was inadequate as an explanation of flour-mill hedging;⁸

⁸ This led presently to at least a partial explanation of the ineffectiveness of verbal inquiry into the motivation of hedging: after conclusions concerning the reasons for mill hedging had been published, a mill manager, asked why millers say that they hedge to avoid risk instead of giving the real reasons, promptly replied, "Because it is hard to explain the real reasons to a person who doesn't understand the milling business."

and statistical inquiries intended to test the efficacy of hedging, which as noted above, produced demonstrably false conclusions explicable only on the ground that acceptance of the pure risk-avoidance concept of hedging had led to the making of a test that grossly misrepresented the effects of hedging as actually practiced. And even nonquantitative inquiry has been sufficient to establish that some hedging is practiced with neither the intent nor the effect of reducing risk.

Business hedging is done for a variety of reasons, which differ according to circumstances. Consequently it is necessary to recognize the existence of several different categories of hedging and to consider them separately with respect to business purposes and economic effects.

1. *Carrying-charge hedging* is done in connection with the holding of commodity stocks for direct profit from storage (rather than merely to facilitate the operation of a producing or merchandising business). Whereas the traditional concept implies that hedging is merely a collateral operation that, in this application, would influence the stockholding only through making it a less risky business, the main effect of carrying-charge hedging is to transform the operation from one that seeks profit by anticipating changes in price level to one that seeks profit from anticipating changes in price relations. Whether a businessman regards such a transformation of the operation as desirable or not depends less on differences between inherent riskiness of the two sorts of operation than on whether he personally feels better able to predict changes in price levels or changes in price relationships. In general, producers of a commodity and those who use it as a raw material, when they undertake storage for profit, prefer to seek the profit by anticipating changes in price level, and therefore either do not hedge, or hedge selectively (see below): it is chiefly merchants, whose merchandising business requires close attention to price differences according to grade, quality, and location, who choose to seek storage profits by anticipating changes in price relations, thus using to best advantage their special knowledge concerning price relations.

Whereas the traditional hedging concept represents the hedger as thinking in terms of possible loss from his stockholding being offset by gain on the futures contracts held as a hedge, the carrying-charge hedger thinks rather in terms of change in "basis"—that is, change in the spot-future price relation. And the decision that he makes is not primarily whether to hedge or not, but whether to store or not.⁹

⁹In consequence, the term "carrying-charge hedging" tends to be used sometimes to designate the combined operation of storage and hedging for profit. In trade usage the combined operation is sometimes called "earning the carrying charge." It is an operation not properly divisible into two parts, for without the hedging the storage becomes a quite different operation, from the business point of view, requiring use of different in-

2. *Operational hedging* is done chiefly to facilitate operations involved in a merchandising or processing business. It normally entails the placing and "lifting" of hedges in such quick succession that expectable changes in the spot-future price relation over the interval can be largely ignored; and it is this fact which chiefly distinguishes operational hedging from carrying-charge hedging. Because the intervals over which individual operational hedges are carried tend to be short, the amount of risk reduction accomplished tends to be small—quite insufficient to explain the observed prevalence of operational hedging. Besides reducing risk, to an extent that the hedger may or may not consider significantly advantageous, it leads to economies through simplifying business decisions and allowing operations to proceed more steadily than otherwise.

Illustrations of the principal advantages of operational hedging may well be drawn from flour-milling because it was study of flour-mill hedging that first led to recognition of the special characteristics of operational hedging. In this industry buying and selling decisions are facilitated because it is easier for the mill buyer to judge prices on particular lots of wheat in terms of their relation to other wheat prices than in terms of absolute level. And similarly it is easier to judge the price offered by a potential flour buyer in relation to a present wheat price than in relation to the price that may have to be paid on a later wheat purchase. When hedging is practiced, it becomes logical to make these buying and selling judgments on the easier basis. And wheat buying in particular can be carried on more steadily than otherwise because the basis is subject to less fluctuation than is the price.

These business advantages of operational hedging, however, depend on the existence of a high correlation between changes in spot prices and changes in futures prices over short intervals—day to day and even within the day. Such correlation of short-interval price changes is not always present, and in its absence there tends to be little operational hedging even though the broader correspondence between changes in spot and futures prices be close enough to permit effective risk reduction through hedging. Flour mills west of the Rocky Mountains in the United States usually do not hedge, because spot wheat prices in that area do not move in sufficiently close day-to-day correspondence with futures prices in mid-western markets to permit satisfactory operational hedging.¹⁰

formation to conduct it successfully, and leading often to a different choice of the intervals over which storage is undertaken.

¹⁰ Mills in the area tributary to Seattle make little use of the alternative of hedging in the Seattle futures market because that is a very "thin" market, with consequent high costs of hedging.

3. *Selective hedging* is the hedging of commodity stocks under a practice of hedging or not hedging according to price expectations. Because the stocks are hedged when a price decline is expected, the purpose of the hedging is not risk avoidance, in the strict sense, but avoidance of loss. Published studies of hedging in the grain trade of the United States have indicated the presence of selectivity in hedging, through reports that hedging was done "to some extent" or "occasionally," chiefly among country elevators [51, Vol. 1, pp. 213, 214] [22]. Efforts on the part of such small firms to gain profits from appraisal of price prospects, as is implied by selectivity in hedging, appear ordinarily ill-advised. But personal inquiry among large and well-managed firms in the grain trade has revealed that, though hedging is their standard practice in most parts of the country, they sometimes hedge incompletely. To the extent that they allow circumstances in individual instances to influence the decision whether to hedge unsold stocks or not, they hedge selectively. Outside the grain and cotton trades, which appear to be the principal ones in which routine hedging is accepted as standard practice in most parts of the country, selectivity in hedging is so common as to suggest that in a considerable number of futures markets the greater part of the short hedging done may be selective.¹¹

When hedging is done selectively, the advantage of the hedging to the individual firm may often (perhaps usually) be measured approximately by the amount of loss avoided directly by the hedging. Though curtailment of the amount of unsold stocks is an alternative means of restricting loss at a time of expected price decline, it is a means that few firms are able to use freely, owing to operating needs for carrying stocks. Selective hedging almost inevitably yields large advantages to any merchandising or processing firm that is able to anticipate price changes reasonably well. From an economic standpoint selective hedging deserves appraisal as simply one aspect of the use of futures markets

¹¹ The prevalence of selectivity in hedging on the smaller futures markets has at least two possible explanations. One, attributing smallness of the futures market to lack of speculative interest in the commodity, would explain the prevalence of selective hedging on the ground that the market lacks enough speculation to support routine hedging by any large proportion of potential hedgers, thus discouraging the development of much operational hedging and making storage for profit from expected price increases, with hedging when price decrease is expected, seem more profitable than carrying-charge hedging.

Another possibility is that the smaller futures markets have as little business as they do because of circumstances apart from the futures market that lead potential hedgers to prefer to rely on price judgments rather than on judgments concerning spot-future price relationships. Recognition of the multiple purposes of hedging should open the way to research that would give better evidence than we now have to explain why some futures markets are as little used as they are.

as a means by which handlers of a commodity increase the efficiency of their participation in the price-forming process, instead of largely withdrawing from such participation, as they do when they practice routine carrying-charge or operational hedging. Futures markets that receive a large amount of selective hedging tend also to have a considerable amount of "speculation" by handlers of the commodity. Inasmuch as selective hedging must come chiefly from those handlers of the commodity who commonly hold substantial stocks, and who therefore take a long position by merely refraining from hedging, it is to be presumed that the "speculative" use of futures by handlers of the commodity comes mainly from dealers whose business requires relatively little holding of physical stocks.

4. *Anticipatory hedging*, which also is ordinarily guided by price expectations, differs from selective hedging in that the hedging contract is not matched by either an equivalent stock of goods or a formal merchandising commitment that it may be said to offset. It takes either of two principal forms: (a) purchase contracts in futures acquired by processors (or manufacturers) to cover raw material "requirements";¹² or (b) sales contracts in futures by producers, made in advance of the completion of production. In either of these forms the anticipatory hedge serves as a temporary substitute for a merchandising contract that will be made later. In the one case it serves as a substitute for immediate purchase of the raw material on a merchandising contract; in the other case it serves as a substitute for a forward sale of the specific goods that are in course of production. The purpose of the hedge may be said to be to take advantage of the current price; or, bearing in mind the usual availability of an alternative means of doing that, merely to gain some advantage in convenience or economy through the choice made between alternatives.

The best presently available statistics that give some indication of the prevalence of anticipatory hedging are those on long hedging, which reflect also the similarly motivated forward merchandising contracts, to the extent that they are hedged, that many processors use as a means of anticipating requirements. Nearly all long hedging consists either of anticipatory hedging or of hedging of forward merchandising contracts (often called unfilled orders) that are themselves anticipatory in the same sense as the anticipatory hedging. On the latest date (September 28, 1956) for which there are statistics of open contracts in cotton that allow accurately segregating "matching" contracts from those that were purely speculative, long hedging contracts

¹² Such use of futures contracts was first given legal status as hedging under the Commodity Exchange Act by an amendment enacted in 1956 (70 Stat. 630).

totaled 1,001 thousand bales, as compared with 268 thousand bales of long speculative contracts [48, p. 192]. This was at a time when the amount of short hedges to be carried was near its peak.

5. Pure *risk-avoidance hedging*, though unimportant or virtually nonexistent in modern business practice, may have played a significant part in the early history of futures markets. In the absence of records concerning the uniformity of hedging by firms using the early futures markets, however, it is impossible to know to what extent early hedging, described as done "to reduce risk," actually had that purpose in the strict sense, or was selective hedging, done to avoid incurring loss from an expected price decline.

Recognition of the fact that hedging is done for a variety of purposes requires defining hedging otherwise than has been customary. The verb "to hedge," in the sense of avoidance or shelter, has no general connotation of avoidance especially of risk; the gambling practice of hedging bets is perhaps as often used to offset an expected loss as to reduce risk in the strict sense; and there is in any case no good reason why the word "hedging" as applied to business practices should be restricted to operations such as gamblers call hedging. For present purposes we need to define only hedging in futures. All the uses of futures that are commonly called "hedging" will be comprised, and all other uses excluded, if we characterize hedging as the use of futures contracts as a temporary substitute for a merchandising contract that is to be made later.¹³

Inclusion as hedging of the practices characterized above as selective hedging and anticipatory hedging requires either regarding hedging as sometimes closely akin to speculation,¹⁴ or defining speculation otherwise than has been usual in economics texts. In ordinary usage and in much economic discussion the word "speculation" refers to buying and selling (or, more accurately, holding) property purely for the sake of gain from price change, and not merely as an incident to the normal conduct of a producing or merchandising business or of investment. So it is usual to distinguish between speculation in securities and the holding of securities for capital gain; many people tend to think it a strained use of the term when speculation in commodities

¹³ This definition was originally given with slightly different wording in [41, p. 560].

¹⁴ For administrative purposes of distinguishing between anticipatory hedging of raw material requirements and speculation, the Commodity Exchange Act, as amended in 1956, restricts such anticipatory hedging to "... an amount of such commodity the purchase of which for future delivery shall not exceed such person's unfilled anticipated requirements for processing or manufacturing during a specified operating period not in excess of one year: *Provided*, that such purchase is made and liquidated in an orderly manner and in accordance with sound commercial practice . . ." In effect this provision draws the same line between hedging and speculation as does the definition of speculation given in the next footnote.

is defined to include the holding by a farmer of part of his crop for a few weeks after harvest; and business purchasing agents object to being said to speculate when they seek to time their buying, within reasonable limits, in accordance with their judgment of price prospects. If speculation is defined in accordance with ordinary usage of the term, hedging and speculation in futures are always distinguishable.¹⁵

IV. *The Price-of-Storage Concept*

Though much uncertainty has existed about the relations of futures prices to spot prices, one proposition long stood unquestioned: there seemed to be no generally necessary relationship between prices that depend on the abundance or scarcity of currently available supplies—spot prices for example—and prices on futures contracts applying to supplies from a subsequent harvest. To be more specific, it was regarded as clear that, in the presence of a current relative scarcity of wheat, prospects for an abundant harvest in the following summer would have no significant bearing on prices paid for existing supplies.

Statistical studies published in 1933, supplemented by further evidence later, showed this belief to be untrue.¹⁶ What happens in fact is that any change in price of a distant, new-crop, wheat future tends to be accompanied by an equal change in prices paid for wheat from currently available supplies.¹⁷ A comparative shortage of currently available supplies of wheat has its direct effect on the spread between

¹⁵ For this purpose, speculation in commodities may be defined as the holding of a net long or a net short position, for gain, and not as a normal incident to operating a producing, merchandising, or processing business. The reference to net position in this definition, proposed in [48, p. 187], serves to exclude arbitrage from speculation. Though the two have something in common, they need to be distinguished, and that is done more conveniently by defining speculation to exclude arbitrage than by adopting a new term to mean "speculation other than arbitrage."

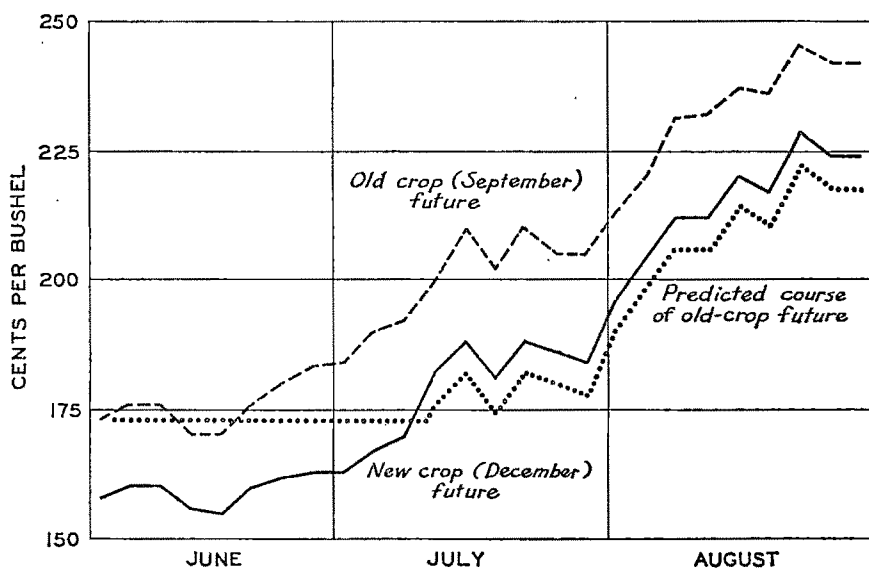
¹⁶ See especially [33, pp. 188-203] [34, pp. 199-205]. These studies, dealing with prices in a single exporting country, were later supplemented by a similar inquiry into price behavior in the major import market for the same commodity [12]. Comparisons of behavior between these two widely differing sorts of markets helped to indicate which behavior characteristics were special to a particular sort of market and which were more generally observable. In both markets prices of the near future responded sensitively to distant price expectations, but the influences that bore particularly on the price of the near future, causing its price movement to diverge more or less from that of the distant future, were appreciably different in the two markets [12, esp. pp. 102-5, 110-26, 136-38].

¹⁷ This statement is true also for most other commodities that have futures markets, but is inapplicable to prices of a commodity, like potatoes or onions, that is incapable of economical interseasonal storage. Gray [9, pp. 305ff] has noted that it seems not to apply to coffee in the United States. Interpretation of his evidence requires recognition that the "price of storage," reflected in the price difference between futures for different dates, is dependent on the *expected* level of stocks during the interval between those dates, and that such expectations regarding future domestic stocks of an imported commodity may be affected by some of the same circumstances that influence the price of a distant future.

the spot price and the futures price, causing wheat from current supplies to sell at a premium over the expected future price of new-crop wheat. In effect, then, the spot price is determined as the sum of the futures price, dependent primarily on expectations, plus a premium dependent on the shortage of currently available supplies.

These observed facts of price behavior were contrary to what was logically deducible from the prevalent concept. Introduction of the concept that intertemporal price differences constitute prices of stor-

CHART 2. ACTUAL COURSE OF NEW-CROP AND OLD-CROP CORN FUTURES AND "PREDICTED" COURSE OF OLD-CROP FUTURE, JUNE-AUGUST 1947*



* "Predicted" course derived by traditional theory from initial price of old-crop future and actual course of new-crop future.

age [39] provided a key to understanding the observed facts and served in effect as a summary of the facts. The most significant of these facts from the standpoint of economic theory is that spot prices of storable commodities tend to respond sensitively to changes in distant expectations. Chart 2 illustrates this tendency. The great price advance that it shows in the new-crop December corn future, owing to crop deterioration in July and August 1947, was accompanied throughout by a like advance in the price of the old-crop September future. If the traditional concept of price dependence on currently available supplies were valid, the price of the September future, comparatively high in June because of shortage of old-crop corn supplies,

would have held fairly steady during June and early July, until deterioration in new-crop prospects caused the December future to rise to and above the price of the September future, and thereafter would have followed the course of the December future, but at a slightly lower level.

The main reason for listing the price-of-storage concept as marking a significant step in the advance of economic science is that it seems capable of displacing the belief that spot prices are commonly little affected by changes in distant expectations. That opinion is not founded on any factual observation, but has its basis in an assumption embedded in the conventional exposition of price formation, an exposition that is ordinarily taken to mean that "supply," as a determinant of spot price, means currently available physical supplies. A belief so derived will not be corrected merely by citing observational evidence to the contrary,¹⁸ but only through providing an evidently valid conceptual scheme that requires bringing expectations into account as determinants of spot prices.¹⁹

V. The Concept of Reliably Anticipatory Prices

Prices on futures markets (and also spot prices of many commodities and prices on the stock market) are observed to change frequently and in an apparently erratic manner. These price changes have traditionally been conceived to be in large part random fluctuations, with some degree of cyclicity impressed upon them. Evidence of the substantial falsity of that concept has long been widely known, but the

¹⁸ One evidence of this fact appears in the short-lived controversy that developed between the present author and Roland P. Vaile [36] [31] [37].

¹⁹ Two recent expositions by leading economists [25] [14] that may seem to ignore or reject the price-of-storage concept were not so intended. They sought to present a theory of price formation under conditions of certainty, leaving the effects of uncertainty to be treated in later elaboration of the theory, and assumed that under conditions of certainty, stocks would be carried only in the expectation of a direct return for storage equal to the "costs" of storage, the latter treated as being invariant with respect to the quantity to be stored. In fact, however, the observed willingness of dealers and processors to carry stocks of wheat, for example, at the end of a crop year for a negative price of storage arises only in small part from the presence of uncertainty. Each of three other considerations has more influence, namely: costs of abnormal acceleration of the movement of new-crop wheat from harvest field to mill rollers; temporal dispersion of harvest times; and geographical dispersion of flour mills among areas with different harvest times.

If convenience of exposition is well served by proceeding in two stages, the first of which assumes that stocks will fall to zero in the absence of an expected return from storage equal to the full "costs" of storage, the simplifying assumptions involved at the first stage should include instantaneous harvest of the entire crop, and costs of movement from producer to consumer that are invariant with respect to rate of movement. The supposed advantage of the two-stage exposition, with price of storage ignored at the first stage, will be found illusory, I think, when economists have fully assimilated the price-of-storage concept.

conflict between concept and evidence could be visible only to a person who was well aware of the distinction between random variation and random walk.²⁰ The so-called "fluctuations" of futures prices, of some other commodity prices, and of stock prices, exhibit close approximations to pure random walk.²¹

When attention was drawn to that characteristic of certain prices, about a quarter-century ago, the discovery aroused no comment and no apparent lasting interest on the part of either statisticians or economists.²² It was a factual observation that carried no economic meaning, even to people who understood the technical distinction between random variation and random walk. But presently the economic meaning of the discovery was found: Pure random walk in a futures price is the price behavior that would result from perfect functioning of a futures market, the perfect futures market being defined as one in which the market price would constitute at all times the best estimate that could be made, from currently available information, of what the price would be at the delivery date of the futures contracts [38, p. 160].

The observation that the behavior of futures prices corresponded

²⁰ A familiar illustration of random variation is the variation in number of spots that turn up when a pair of "true" dice is thrown after being thoroughly shaken each time. By proceeding from that illustration, one may illustrate random walk by drawing on a chart a line that moves forward one space for each throw of the pair of dice, and up or down by a number of units equal to the number of spots minus seven (seven being the "expected" number of spots on each throw). Randomness, in the statistical sense, however, does not necessarily involve absence of known causes for the events designated as random, but only that individual events are unpredictable from knowledge of previous events in the series. Thus prices may change from known causes, but if the changes are unpredictable from any knowledge of previous prices and price changes, as the changes in the curve drawn on the basis of dice-throwing are unpredictable from the previous course of the curve, the price series exhibits random walk.

²¹ This appears to be true of commodity prices only within time spans not longer than about one year, but true of stock prices over much longer time spans.

²² The two early papers on the subject were complementary in nature. Mine [35] stressed the difference between random variation and random walk, and presented a 2400-term random-walk series as a device both for illustrating the close conformity of actual price series with the random-walk model and for testing such evidences of departure from that model as might be observed. Cowles and Jones [6] gave a great amount of statistical evidence in the course of exploring the question whether appreciable non-randomness of stock-price changes might be found at some difference-intervals though not at others. See also [7], in which Cowles gave revised results that eliminated the effects of inadvertent use in [6] of one index number series that had employed undesirable averaging. Kendall [19], much later and in apparent ignorance of earlier work, provided a test of the hypothesis that nonrandomness of change might be revealed by serial correlations of orders higher than the first, using a constant difference-interval. The only substantial indication of significant serial correlation that Kendall found was in a first-order coefficient for cotton prices; and that, as shown in [49], was a correlation attributable to averaging in the construction of the cotton price series used, hence invalid as evidence that cotton prices showed any departure from random walk.

closely to random walk thus led to the economic concept that futures prices are *reliably* anticipatory; that is, that they represent close approximations to the best possible current appraisals of prospects for the future [46]. Conceiving the "fluctuations"²³ of futures prices to be mainly appropriate responses to valid changes in expectations produces a great change in thought regarding them, as compared with regarding the price movements as mainly lacking economic justification.

Further discussion of the evidence that futures prices are reliably anticipatory requires dealing with a problem of the meaning of "reliability" in this context. Custom has established the idea that reliability of uncertain expectations is to be tested by correspondence between the expectation and the event, but we need here to consider reliability of expectations in the sense of correspondence between the actual expectation and what ought to be expected in the light of available information. At times, in order to avoid confusion, I shall speak of the latter as *anticipatory reliability*.

The inference, from evidence of approximate randomness of change in futures prices, that those prices have a high degree of anticipatory reliability was initially open to serious question on the ground of suspicion that the price changes were in fact much less nearly random than early statistical tests seemed to indicate. Randomness of walk in a statistical series is not a specific characteristic detectable by any one specific test, but a term that designates absence of any systematic characteristic—absence of any sort of "structure," as Cowles and Jones aptly expressed it [6]. Because the kinds of structure commonly believed present in futures prices and in stock prices are trends and cycles (in a somewhat loose usage of those terms), those kinds of structure were the first looked for as evidence of nonrandomness; and the statistical tests used were familiar ones that had been proved appropriate for revealing structure of those sorts in other data, namely, tests for the presence of simple autocorrelation.²⁴ Failure of those tests to reveal an appreciable degree of structure in futures prices, however, left open the question whether other sorts of structure might not be present.

Two principal lines of inquiry have been followed in the search for kinds of structure that would not be revealed by simple autocorrela-

²³ The quotation marks are repeated here as a reminder that the price changes referred to do not have a dominantly wave-like character such as tends to be implied by calling them fluctuations.

²⁴ By "simple" autocorrelation I mean autocorrelation in the sense in which that term has been commonly understood, namely correlation between items uniformly spaced in time, or in the case of correlation of first differences, differences taken over uniform time intervals, uniformly spaced. It would be reasonable to regard any form of structure in a time series as involving some form of autocorrelation.

tion analysis, or equivalent methods. One line of inquiry has reasoned that the price movements to be correlated should be selected according to magnitude of the movement, without regard to the time taken to accomplish a movement of that amount. By proceeding thus, Alexander [1] has recently shown the presence of an appreciable tendency for stock-price movements of 5 per cent or more (in an index of industrial stocks) to be followed by further price movement in the same direction.²⁵ Houthakker [15, p. 166] has published results that, though calculated and presented from a point of view different from that of Alexander, can be interpreted as indicating presence of the same sort of tendency in prices of wheat and corn futures that Alexander found in the stock-price index.

Another line of attack involved the design of a new type of statistical test that appeared capable of revealing any such tendency toward continuity of movement in futures prices, if it were present, and also capable of revealing a tendency for a price movement in one direction to be followed by an opposite movement (reaction), but without uniformity in timing of the reaction, which might sometimes be prompt and sometimes considerably delayed. A test devised for this purpose promptly yielded statistically significant evidence of structure in futures prices [3], but further research was required to determine the kind of structure that was indicated.²⁶ The principal component of the structure was presently identified as such as would be produced by a tendency for the price effects of new market information to be partially dispersed over a considerable time interval rather than all concentrated within the day on which the new information became available [45] [46]. Later it was found possible to determine approximately the fraction of the average price effect that was so dispersed and the average time span of dispersal, and also to derive similar approximations for a secondary sort of structure, involving excessive price

²⁵ Price moves of 5 per cent were the smallest ones considered by Alexander. In an earlier work of mine, I applied the same principle as did Alexander to study of very small price movements of futures, and found in the smallest movements, of which there may be several hundred within a day, a substantial tendency to negative (rather than positive) correlation [43, p. 11]. Like Alexander, I found that the evidence of structure that was revealed by considering movements of given size tended to become invisible under consideration of movements over given time intervals.

Analysis of correlation by movement size is laborious (my work along that line was done before electronic computers became widely available), and partly for that reason I turned to another approach, described below, that seemed to hold as good, or perhaps better, possibilities of uncovering the presence of obscure sorts of structure in price "fluctuations."

²⁶ The difficulty in identifying the kind of structure indicated arose partly from inherent difficulty in predicting how a new sort of test, designed to be responsive to a variety of different sorts of structure, would respond to particular sorts of structure; but that inherent difficulty was complicated by the fact that the kind of structure indicated was of an unexpected sort.

movement on individual days, with reaction dispersed on the average over a period of a few adjacent days [20]. The latter, rather weak, tendency was found to be associated with relatively small price movements, and the former tendency, mainly with the larger price movements.

The results produced by the two lines of inquiry summarized above appear at present to be entirely consistent. Those from the first approach are the more readily interpretable, up to a certain point. Those from the second approach lend themselves the more readily to appraisal of the degree of anticipatory reliability that can be attributed to futures prices, or to such other prices as deserve similar appraisal. The most notable feature of the evidence from these two lines of inquiry, however, is not quantitative but qualitative. Each has indicated that the main kind of structure present in anticipatory (speculative) prices is roughly the opposite of that which has been chiefly charged against such prices. Whereas these prices commonly have been thought to "fluctuate" too much, showing large movements up or down that tended to be followed by reaction, in a roughly wave-like pattern, the evidence is that reaction is common only from very small movements, of short duration, which may be regarded as caused by minor accidental disturbances; that in the main the imperfection of behavior in futures markets takes the form of retardation of price response to information that warrants price change. This retardation, being an effect similar to that of shock-absorbers on an automobile, tends toward the avoidance of excessive initial movement and subsequent reaction.

The concept that futures prices are reliably anticipatory, in the full sense of that term, evidently does not correspond wholly to the facts. In that respect it is like the concept that gases are perfectly elastic, as represented by Boyle's Law, $VP = C$. If the economic concept of anticipatory reliability of futures prices is subject to a good deal more supplementary qualification than is the physical concept of perfect elasticity of gases, it appears nevertheless to correspond more closely to full reality than does any other concept that might be used for fairly simple representation of the main facts. It avoids the gross misrepresentation involved in the concept that the variations in futures prices are in large part unwarranted, wave-like, fluctuations; and its own misrepresentation is of a sort that is inevitable in a concept that, for the sake of simplicity, must fall short of representing the full facts.

VI. *Risk Premiums vs. the Market-Balance Concept*

The concept that risk-bearing commands a reward has been applied at several related points in the theory of futures markets, but has re-

cently attracted attention principally in connection with discussion of J. M. Keynes' "theory of normal backwardation." The market-balance concept, recently proposed by Gray [9] [10] as a substitute for the risk-premium concept in that context, has been advanced on the basis of evidence that may be thought inconclusive,²⁷ and has been applied only to explaining differences in seasonal trends²⁸ of futures prices in different markets—not obviously a matter of great importance. The reasons for nevertheless discussing the market-balance concept in the company of the better-proved and more demonstrably fruitful concepts discussed previously are, first, that the grounds for considering the merits of the market-balance concept are stronger than appears from the statistical evidence alone; and secondly, that there is evident need for taking other considerations into account, along with risk, at several points in the theory of futures markets where the tendency has been to consider only the risk aspect.

The earlier studies that sought to test Keynes' theory of normal backwardation took seasonal trend in futures prices to be a measure of risk premium (as Keynes apparently had done), and focused on the question whether the statistics gave evidence of a tendency to such seasonal trend or not. Telser at first denied that they did [29], whereas Houthakker [13] [15] and Cootner [5] found evidence of seasonal trends consistent with the Keynesian hypothesis. Gray, meanwhile, had been making studies of some of the smaller futures markets, which had previously received little attention from economists, and was thus led to put together the pertinent evidence for a considerable number of different markets, large and small. The diversity in magnitude, and even in direction, of apparent seasonal trend that he found among the various markets appeared to him not explainable on the basis of differences between risk premiums in different markets [10, p. 258], whereas the differences did appear explainable on other grounds that could be comprised by the term "market balance." The term was suggested by the evidence that the differences in seasonal trend were largely associated with differences between markets in amount of speculation relative to hedging—or, more strictly, relative to the potential amounts of hedging, inasmuch as a shortage of specu-

²⁷ The purely statistical evidence in [10, p. 257], for example, did not include a specific test of the hypothesis that the observed variation among apparent seasonal trends might be explainable as consistent with existence of a uniform tendency toward positive seasonal trend in all the markets and periods considered.

²⁸ I speak of "seasonal trends" rather than "bias," which has been the term more commonly used, because it designates what is actually measured, and then interpreted as evidence of bias; and I mean the term to comprise trends measured with respect to some pertinent seasonal variable such as Cootner [5, pp. 400-1] has suggested should be used, as well as trends measured with respect to calendar dates.

lation in a futures market must restrict the amount of hedging actually done.

The market-balance concept thus emerged because examination of a wider range of observational data than had been considered before posed a new question for answer. Viewed as bearing only on the original question—whether futures prices tend to show an upward seasonal trend—the new data could be interpreted as supporting an affirmative answer, in agreement with the general tenor of previous evidence; but the new data posed also the question of how to account for the occurrence of seasonal trends that in some markets and circumstances appeared to be significantly positive, and in others, significantly negative. The answer that was suggested, in the form of the market-balance concept, does not require rejecting the risk-premium concept, but regarding it as providing at best only a partial explanation of the tendencies to seasonal trend observable in futures prices.

Speculators' earnings have received significant direct study only by Stewart [27], and his inquiry, based on detailed records for nearly 9,000 speculators in grain futures, and covering a time period of nine years, was singularly unproductive of positive conclusions. Such unproductiveness in a large-scale investigation by an able economist skilled in statistical analysis and with a wealth of data at his command must indicate need for reconsidering prevalent economic ideas about the bases of speculative profits, which Stewart sought to explore. The "sample" of speculators that he dealt with showed a strong over-all tendency for them to incur losses, and though many among them gained profits, Stewart was unable to find an objective characteristic by which to classify speculators into groups with appreciably different profit experience.

If speculation be regarded as a skilled occupation (not mere risk-taking), in which the making of profits depends both on special skills and on continuously maintained knowledge of current economic conditions and prospects relevant to prices of particular commodities, Stewart's results become understandable. He had no information by which to classify speculators according to special speculative skills, or according to the amount and quality of their pertinent knowledge; hence his study could throw no direct light on the relations of speculative rewards either to special speculative skills or to amounts of pertinent economic information that they used.²⁹

In order that speculation should contribute to economically desirable price formation, speculators must keep well informed concerning

²⁹ The over-all tendency toward losses by the speculators in Stewart's sample must be attributed chiefly to lack of full representativeness of the sample; it included relatively few, if any, professional speculators, and may have been unrepresentative otherwise.

the pertinent economic facts, and must be able to appraise those facts properly. The evidence considered earlier that futures prices are reliably anticipatory, to a fairly high degree, indicates that a large proportion of speculation in futures markets has been based on sound information, properly appraised. Such speculation deserves to command a wage, and that fact is ignored when the returns from speculation are viewed solely as a reward for risk-bearing.

Data published by the Commodity Exchange Authority in recent years concerning some of the smaller futures markets have revealed that much of what is classed by the CEA as speculation in them comes from persons and firms dealing in the commodity, such as are ordinarily expected to be hedgers.³⁰ If one accepts the argument that speculation should be defined as suggested earlier (footnote 15) this raises the question whether a considerable part of the contract holdings that have been classed as "speculative," in those markets, might not more properly be treated as anticipatory hedging. In any case the evidence reveals that, for those commodities, the futures markets have served in important degree to allow dealers in the commodity to exercise their price-forming function more freely than they otherwise could. In the absence of a futures market, price formation is almost wholly in the hands of dealers (using that term to comprise all handlers of the commodity); and many of them must exercise that function under the handicap that their need to accumulate stocks in order to maintain their position as merchandisers may force them to act in support of a price that they regard as too high, or obstacles to stock accumulation at a given time may bar effective market expression of an opinion that the current price is unduly low.³¹ The presence of a futures market permits dealers to exercise price judgment without such restraints. The dealer who must accumulate stocks at a certain time for merchandising reasons may sell futures in equivalent amount and thus

³⁰ Such data appear in [26, p. 22], and subsequently in a number of CEA "surveys" for several markets and dates.

³¹ Particularly clear examples are afforded by the onion market, which is one of those in which a large proportion of the futures contracts classed as speculative was found to be held by dealers in the commodity [47, p. 7]. Onions from the late summer crop, which are stored for use over a period extending into April, are sold by growers to "country shippers," who store them. In order to maintain his competitive position as a dealer, the country shipper must buy when growers want to sell, and he is thus severely limited in opportunity to adjust his stock-holding in accordance with expectations of price change. Country shippers sell in turn to "dealers" in the large cities, who cannot economically accumulate large stocks because refrigerated storage, on which they would ordinarily need to rely, is much more expensive than "common storage" in the cold climates where most of the onions are produced. Consequently the city dealer, who may be better informed about the nationwide supply and demand situation for onions than most country shippers, and financially better able to carry risks of price change, is handicapped in expressing his price opinions through adjustment of stock-holdings.

avoid exerting a price-supporting influence when he expects a price decline; and the dealer who expects a price advance, but cannot well accumulate physical stocks of the commodity at the time, can buy and hold futures instead.

Thus the introduction of a futures market could result in substantially improved price behavior even though the futures market were used only by dealers in the commodity, the better price behavior being attributable to the opportunity given dealers to exert price influence strictly in accordance with price judgment instead of exerting price influence, or refraining from doing so, largely in response to immediate

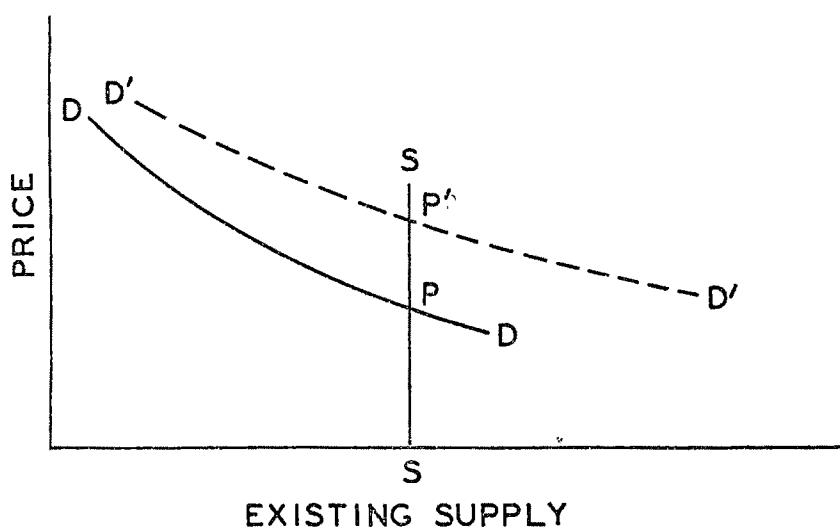


FIGURE 1

merchandising or processing needs. Existence of a futures market may tend toward better support of prices during rapid marketing of a crop shortly after harvest, not primarily because speculators demand a lower risk premium than do dealers (if that be true), but chiefly because the futures market allows stocks to be "carried" either as physical stocks held unhedged or through the holding of long futures contracts that offset short hedging. This tends to change the balance of the market in the sense of the market-balance concept.

Because potential carriers of stocks have differing opinions regarding the price at which they can afford to buy for carrying, there exists at any time a demand curve for stock-carrying such as is represented by *DD* in Figure 1. Introducing the opportunity for stocks to be carried through the holding of futures contracts tends to move this

curve rightward to a position such as $D'D'$, giving an intersection at P' with the vertical, representing total stocks to be carried, at a higher level than before. Such a rightward shift clearly tends to occur if the futures market attracts many speculators who would not otherwise deal in the commodity, and it might occur also if the futures market were patronized only by dealers in the commodity.³²

The conclusion, considered in an earlier section, that hedging is done for a variety of reasons, not merely to reduce risk, carried no necessary implication that speculation should be regarded as other than pure risk-bearing; but here we have seen further evidence that futures markets are viewed much too narrowly when they are regarded as serving merely to allow transfer of risk from hedgers to speculators: The risk-premium concept has appeared inadequate, by itself, to account for observed differences in seasonal trends of futures prices. Direct consideration of returns to speculators has produced evidence that seems to require regarding the returns as mainly a wage, often negative, that varies greatly according to ability and knowledge of the speculator. And information that has become available concerning futures markets in which much of the hedging is selective, and much of the "speculation" comes from persons who deal in the commodity otherwise, suggests that they serve in large part as means by which dealers take risks discriminatingly, and make their price judgments bear more effectively on price formation.

VII. *The Place of Empirical Research in Economics*

Around 1920 and subsequently, when economics was turning strongly toward doing more empirical research, it was common for

³² The effect in the case of a futures market used only by dealers is not necessarily to move the curve to the right because DD , representing amounts of stock that dealers are willing to hold unhedged in the absence of opportunity for hedging, cannot be taken to represent also the amounts that they would be willing to hold unhedged, at the same prices, in the presence of opportunity for hedging. The possibility that such a rightward shift might occur even in the case of a futures market used only by dealers was suggested to me by the great apparent effect of the onion futures market in supporting the post-harvest price level for that commodity, which seemed difficult to explain solely on the ground of price support given by pure speculators (persons not connected with the industry) in view of the fact that, according to the available information, such speculators accounted for only about half of the long "speculative" holdings of onion futures at the times when such support was principally needed [47, p. 7].

There is a general tendency for performance of the storage function for any seasonally produced commodity to concentrate largely at some one stage of the marketing process. The concentration is most commonly at terminal markets, but it may be at country points, as for onions, or in the hands of processors of the commodity, as appears to be the case with rubber; but in any case, such concentration tends to restrict opportunity for exerting price influence through the holding of physical stocks mainly to those handlers of the commodity who operate at that stage. Existence of a futures market, allowing the many other handlers of the commodity to readily "carry" stocks by holding futures contracts against hedged stocks, would tend therefore to produce such a rightward shift as is illustrated in Figure 1, even though only handlers of the commodity used the futures market.

economic theorists to say that the function of empirical research was to verify theory. One may still sometimes hear that opinion expressed. It is an opinion that has its foundations in the philosophy of science that was elaborated by John Stuart Mill [23, esp. Bk. 3, Ch. 11; Bk. 6, Ch. 9] or else in reasoning similar to that of Mill. The feature of Mill's philosophy that gave grounds for that view had been widely recognized as fallacious before the end of the nineteenth century, and Marshall, in his *Principles*, recorded dissent from the view that economics is peculiarly a deductive science [21, p. 29]. Economic theorists have in fact rarely shown a strong feeling of need for empirical verification of theory. More typical of their attitude, at least prior to recent years, has been the aphorism, "If statistics conflict with theory, so much the worse for the statistics."

Empirical research has long been recognized as serving to clothe theory in a body of realistic circumstance that is necessary, or at least advantageous, for the practical application of theory to specific economic problems. But that use of empirical research is concerned with applied economics, not with advancing economics as a science. Though Marshall rejected Mill's classification of the sciences according to method, which had permitted regarding economics as peculiarly a deductive science with correspondingly limited opportunity for effective use of empirical research, Marshall accepted the nineteenth century view that the accomplishments of a science are to be measured by the laws of nature that it has discovered (see below); and he failed to discriminate between practical art and science. Predicting the tides "at London Bridge or at Gloucester," to which Marshall likened the tasks of economics [21, p. 32], is not an undertaking that advances science.

A third view, which has had much influence in guiding empirical research on the part of economists aiming to advance economics as a science, stems from the opinion that the chief shortcoming of economics has been a failure to quantify its laws. One of the grounds for that view has been the recognized value in natural science of quantitative investigation. The research that we have been considering here offers many examples of the values of quantitative work in economics also. But the argument for quantifying economic theory depends more particularly on acceptance of the view, prevalent in natural science as well as in economics until about the beginning of the twentieth century, that the substance of science is the body of "laws of nature" that it has discovered. Marshall's statement that, "A science progresses by increasing the number and exactness of its laws . . ." [21, p. 30] is a representative expression of the view. The turn of thinking in the natural sciences toward the conception of science that Conant has expressed particularly well may have been started by observation that the Darwinian concept of evolution continued to stand and to

mark a great advance in biological science even though Darwin's "laws" of evolution became in considerable part discredited. In physical science, the results of the Michelson-Morley experiment (1887) posed an evidently severe conceptual problem, and those results were followed by a series of other discoveries that focused attention similarly on the role of concepts in science [18, Ch. 8].

Quantifying economic theory can produce clear advantages for applications of theory to practical economic and business problems, but it is not so clear that quantifying received theory leads often to advancing understanding of economic phenomena. In the research considered here, the main useful results of attempts to quantify received theory have come through demonstration that the theory was fallacious—fallacious because of having started from wrong assumptions. The extreme example of such demonstration arose from an attempt to quantify the theory that price relations between old-crop and new-crop futures depended on expectations regarding the size of the new crop, which proved wholly untrue. After the price-of-storage concept had provided the basis for a new theory, quantification of the price-of-storage function involved in it produced some significant new information in the initial case, most fully revealed in [41, p. 556], where changes in the function from period to period are shown. Thereafter, though numerous additional quantifications of the function in specific instances could be useful for purposes of practical application, additional quantifications seemed not to offer promise of yielding further advances in understanding.³³

Economics has been forced to go through a difficult process of learning how to make effective use of observation as a continuing means of advance, after having become accustomed to rely principally on deduction from a body of observational information that remained comparatively static because it was limited largely to what could be learned from "common observation" and from introspection. The difficulty of the learning process has been enhanced by a tradition in economics of accepting problems of evident practical importance as the ones at which research should be directed. Economists have been slow to recognize the error in Mill's attempt to explain the relatively primitive state of economics as a science on the ground that, "In every department of human affairs, practice long precedes Science: systematic inquiry into the modes of action of the powers of nature, is the tardy product of a long course of efforts to use those powers for practical ends" [24, p. 1].

Natural science did not develop out of practice. That route led to

³³ The further quantifications provided in [2] and [29] may nevertheless be regarded as useful for corroboration of the original findings.

the empirical accomplishments of Watt, Burbank, and Edison, not to the accomplishments of Newton, Darwin, Mendel, or Heisenberg. Science has advanced by attacking manageable problems of acquiring understanding of observed phenomena with little or no immediate regard to evident practical importance of the problems. Seeking support for their efforts, scientists have often laid stress on the practical usefulness of scientific advance. Not infrequently they have chosen to push a particular line of inquiry because of hope that it would serve such a practical end as unlocking the mystery of cancer. But the route of science toward such an end is always that of acquiring information that promises to yield greater understanding. For example, the research economist with a scientific viewpoint who may be considering the study of futures markets does not ask himself whether futures markets are economically important institutions, concerning which conclusions are needed for practical purposes; he asks instead whether study of futures markets offers favorable opportunity for gaining understanding of the behavior of businessmen, including speculators, and of the behavior of prices of the class that we have called anticipatory. He makes his decision on principles like those that govern the decision of a geneticist considering the study of fruit flies.

The place of empirical inquiry in economic science, it appears to me, is that of making observations, statistical or otherwise, and conducting analysis such that one may be able to say, paraphrasing Conant, that in economics new concepts arise from observation and analysis, and the new concepts in turn lead to further observation and analysis.

REFERENCES

1. S. S. ALEXANDER, "Price Movements in Speculative Markets: Trends or Random Walks," *Indus. Management Rev.*, May 1961, 7-26.
2. M. J. BRENNAN, "The Supply of Storage," *Am. Econ. Rev.*, Mar. 1958, 47, 50-72.
3. C. S. BRINEGAR, "*A Statistical Analysis of Speculative Price Behavior.*" Doctoral dissertation, Stanford 1954.
4. J. B. CONANT, *On Understanding Science*. New Haven 1947.
5. P. H. COOTNER, "Returns to Speculators: Telser versus Keynes," *Jour. Pol. Econ.*, Aug. 1960, 48, 396-404, 415-18.
6. A. COWLES AND H. E. JONES, "Some a Posteriori Probabilities in Stock Market Action," *Econometrica*, July 1937, 5, 280-94.
7. A. COWLES, "A Revision of Previous Conclusions Regarding Stock Price Behavior," *Econometrica*, Oct. 1960, 28, 909-15.
8. T. F. GRAF, "Hedging—How Effective is It?" *Jour. Farm Econ.*, Aug. 1953, 35, 398-413.
9. R. W. GRAY, "The Characteristic Bias in Some Thin Futures Markets," *Food Res. Inst. Stud.*, Nov. 1960, 1, 296-312.

10. ———, "The Search for a Risk Premium," *Jour. Pol. Econ.*, June 1961, 69, 250-60.
11. G. W. HOFFMAN, *Grain Prices and the Futures Market*: U.S.D.A. Tech. Bull. No. 747, Jan. 1941.
12. S. HOOS AND H. WORKING, "Price Relations of Liverpool Wheat Futures," *Wheat Stud.* (Food Res. Inst., Stanford), Nov. 1940, 17, 101-43.
13. H. S. HOUTHAKKER, "Can Speculators Forecast Prices?" *Rev. Econ. and Stat.*, 1957, 39, 143-51.
14. ———, "The Scope and Limits of Futures Trading," in Moses Abramovitz *et al.*, *The Allocation of Economic Resources*. Stanford 1959.
15. ———, "Systematic and Random Elements in Short-Term Price Movements," *Am. Econ. Rev.*, May 1961, 51, 164-72.
16. H. S. IRWIN, "Seasonal Cycles in Aggregates of Wheat-Futures Contracts," *Jour. Pol. Econ.*, Feb. 1935, 43, 34-49.
17. ———, *Evolution of Futures Trading*. Madison, Wis., 1954.
18. J. JEANS, *The Growth of Physical Science*. New York 1948.
19. M. G. KENDALL, "The Analysis of Economic Time Series," *Jour. Royal Stat. Soc.*, 1953, 116, 11-34.
20. A. B. LARSON, "Measurement of a Random Process in Futures Prices," *Food Res. Inst. Stud.*, Nov. 1960, 1, 313-24.
21. A. MARSHALL, *Principles of Economics*, 8th ed. London 1922. (1st ed. 1890.)
22. J. M. MEHL, *Hedging in Grain Futures*: U.S.D.A. Circular No. 151, June 1931.
23. J. S. MILL, *Principles of Political Economy*, Rev. ed. New York 1900. (1st ed. 1848.)
24. ———, *A System of Logic*, People's ed. London 1898. (1st ed. 1843.)
25. P. A. SAMUELSON, "Intertemporal Price Equilibrium: A Prologue to the Theory of Speculation," *Weltwirtschaft. Archiv*, Dec. 1957, 79, 181-221.
26. B. STEWART, *Trading in Wool Top Futures*: U.S.D.A. Circular No. 604, Aug. 1941.
27. ———, *An Analysis of Speculative Trading in Grain Futures*: U.S.D.A. Tech. Bull. No. 1001, Oct. 1949.
28. C. H. TAYLOR, *History of the Board of Trade of the City of Chicago*. Chicago 1917.
29. L. G. TELSER, "Futures Trading and the Storage of Cotton and Wheat," *Jour. Pol. Econ.*, June 1958, 66, 233-55.
30. ———, "Rejoinder," *Jour. Pol. Econ.*, Aug. 1960, 68, 404-15.
31. R. S. VAILE, "Inverse Carrying Charges in Futures Markets," *Jour. Farm Econ.*, Aug. 1948, 30, 574-75.
32. V. A. WIESE, "Use of Commodity Exchanges by Local Grain Marketing Organizations," *Proceedings, Chicago Board of Trade Annual Symposium*, Sept. 1952, pp. 108-16.
33. H. WORKING, "Price Relations Between July and September Wheat Futures at Chicago Since 1885," *Wheat Stud.* (Food Res. Inst., Stanford), Mar. 1933, 9, 187-238.
34. ———, "Price Relations Between May and New-Crop Wheat Futures

- at Chicago Since 1885," *Wheat Stud.* (Food Res. Inst., Stanford), Feb. 1934, 10, 183-228.
35. ———, "A Random-Difference Series for Use in the Analysis of Time Series," *Jour. Am. Stat. Assoc.*, Mar. 1934, 29, 11-24.
 36. ———, "Theory of the Inverse Carrying Charge in Futures Markets," *Jour. Farm Econ.*, Feb. 1948, 30, 1-28.
 37. ———, "Professor Vaile and the Theory of Inverse Carrying Charges," *Jour. Farm Econ.*, Feb. 1949, 31, 168-72.
 38. ———, "The Investigation of Economic Expectations," *Am. Econ. Rev., Proc.*, May 1949, 39, 150-66.
 39. ———, "The Theory of Price of Storage," *Am. Econ. Rev.*, Dec. 1949, 39, 1254-62.
 40. ———, "Futures Trading and Hedging," *Am. Econ. Rev.*, June 1953, 43, 314-43.
 41. ———, "Hedging Reconsidered," *Jour. Farm Econ.*, Nov. 1953, 35, 544-61.
 42. ———, "Whose Markets? Evidence on Some Aspects of Futures Trading," *Jour. Marketing*, July 1954, 29, 1-11.
 43. ———, "Price Effects of Scalping and Day Trading," *Proceedings of Chicago Board of Trade Annual Symposium*, Sept. 1954, 114-39.
 44. ———, "Review of Irwin, Evolution of Futures Trading," *Jour. Farm Econ.*, May 1955, 37, 377-80.
 45. ———, "New Ideas and Methods for Price Research," *Jour. Farm Econ.*, Dec. 1956, 38, 1427-36.
 46. ———, "A Theory of Anticipatory Prices," *Am. Econ. Rev., Proc.*, May 1958, 48, 188-99.
 47. ———, "Price Effects of Futures Trading," *Food Res. Inst. Stud.*, Feb. 1960, 1, 3-31.
 48. ———, "Speculation on Hedging Markets," *Food Res. Inst. Stud.*, May 1960, 1, 185-220.
 49. ———, "Note on the Correlation of First Differences of Averages in a Random Chain," *Econometrica*, Oct. 1960, 28, 916-18.
 50. U.S. DEPT. OF AGRICULTURE, *Annual Report Dept. of Agriculture, 1923*, Washington, D.C.
 51. U.S. FEDERAL TRADE COMMISSION, *Report on the Grain Trade*, 7 vols., 1920-26, Washington, D.C.

SEASONAL UNEMPLOYMENT AND UNEMPLOYMENT INSURANCE

By JAMES O'CONNOR*

When in the late 1930's individual states wrote unemployment compensation programs into law, there was widespread sentiment against including seasonally unemployed workers under coverage. Implicit in those laws which in fact barred seasonal employees¹ was the notion that workers deliberately chose seasonal employments and therefore, during slack seasons, were voluntarily unemployed.

These provisions were not enforced; there seemed to be no way to formally distinguish between seasonal unemployment and cyclical or "structural" unemployment. What is more, it was apparent that there were no adequate operational definitions of seasonal firms or seasonal industries.

In current practice, unemployed workers otherwise eligible for benefits are offered off-season, temporary jobs. In this way "voluntary" seasonally unemployed workers are distinguished from "involuntaries"; workers who refuse off-season employments comparable to their on-season jobs are declared ineligible for benefits.² For this approach to be successful, however, comparable off-season employments must actually be available. Moreover, enforcement procedures must be efficient. There appears therefore to be some room for error in the determination of unemployment insurance claims. Probably one-third of all beneficiaries during prosperity periods are seasonal workers.³

*The author is instructor in economics at Barnard College. I am indebted to Gary Becker for helpful comments and suggestions.

¹As late as 1949, 21 states still had provisions restricting the eligibility of seasonal workers [1, p. 191].

²Agricultural workers, however, are generally automatically declared ineligible. Moreover, a certain period of work experience, or a certain income, or a combination of the two, is required of all workers.

³This estimate is derived as follows: During the prosperity years, 1955-57, of 2,936,000 jobless workers, 587,000, or 20 per cent, were seasonally unemployed [13, pp. 7, 15]. New workers, re-entries, and voluntary job changers made up 30 per cent of the total; structural unemployment, 10 per cent; 40 per cent was "not measured" by the BLS.

Of all jobless workers, 8 per cent had been unemployed for more than 26 weeks and therefore can be assumed to have exhausted their benefits. Supposing that all of the "not measured" category reflects structural unemployment, then it can be assumed that 42 per cent of all unemployed workers were collecting benefits as structurally unemployed. Next,

Conceptually, though, the notion of seasonal unemployment is clear enough. In this article, seasonal unemployment is defined as annually or semi-annually recurring unemployment *fully anticipated* by employers and employees on the basis of experience in previous years. A seasonal worker is an individual who expects each year to receive a certain amount of real income in the form of leisure.⁴ Unfortunately, as indicated above, this concept in common with many others in economics lacks a close empirical counterpart.

What is more, this definition of seasonal unemployment implies that variations in the seasonal demand and supply of labor in any given employment are stable from one year to the next. For example, if an individual found six months' employment in the garment trades last year, it is assumed that equivalent employment will be available in that industry to him this year. Actually some industries have exhibited slowly shifting patterns of seasonal variation in employment [5, pp. 144-54] [6, pp. 337-41].

Despite these problems, an attempt is made in this article to examine unemployment insurance programs from the standpoint of their effect on the allocation of labor between industries of varying degrees of seasonal instability.

I. *Unemployment Compensation and Labor Market Equilibrium*

In competitive markets characterized by *predictable* seasonal fluctuations in labor demand, equilibrium wage rates in unstable employments must be such, other things being equal, as to yield the same annual income as in stable employments. If the average utility of leisure were zero, for example, wage rates in Industry A, providing, say, six months of employment each year, would have to be twice those in Industry B, operating year-round. However, if the utility of leisure is positive, wage differentials between stable and unstable industries will be smaller. What is more, if there are seasonal fluctuations in the supply of labor (if some individuals choose to work longer than others at a given wage rate), equilibrium wage rates in unstable employments will not necessarily exceed those in stable employments. Some workers, that is, may be willing to pay a premium for an unstable employment

assume that individuals in the "new worker, etc." category were ineligible for benefits. Thus the proportion of seasonally unemployed beneficiaries to all beneficiaries was 32.3 per cent [(42 plus .20) divided by .20]. However, the fact that some re-entries may have been seasonal workers biases this estimate downward. On the other hand, the fact that agricultural workers are not eligible for benefits, yet are included in the "seasonally unemployed" figure, introduces an upward bias.

⁴ Clearly, leisure is a large component of everyone's real income. In the above context, the term refers to all leisure beyond that "earned" by the full-time worker employed year-round.

opportunity. All a priori statements about the wage structure under conditions of anticipated employment instability are therefore suspect [4, pp. 128-32] [2].

When unemployment compensation payments are newly available, the real costs of work in unstable relative to stable employments are altered. Accordingly, the introduction of an unemployment insurance program, or an increase in the unemployment-benefit/wage-rate ratio may disturb equilibrium in the labor market, producing a new allocation of resources. Unstable, eligible employments become more attractive relative to stable, or unstable ineligible employments.

This can be illustrated by a simple example: Given a homogeneous labor force, suppose equilibrium wages in employments A, B, and C are \$300, \$360, and \$840 monthly, respectively. Employment in A is stable; in B, workers anticipate three-months, and in C, nine-months unemployment annually. Assuming that there are no seasonal fluctuations in the supply of labor, the average utility of leisure is therefore \$120 monthly. All workers are indifferent on the margin with regard employment in A, B, or C, since annual real incomes are equal (\$3600) in all three.

Suppose now that an unemployment compensation plan is introduced. It is assumed that individuals in A qualify for benefits on the basis of previous income earned, yet since they are never unemployed, they are ineligible for benefits. Suppose secondly that the law specifically excludes anyone employed less than four months each year; accordingly, individuals in C do not qualify for benefits. Lastly, suppose that workers in B are eligible for payments totaling \$300 (\$100 monthly).

Since workers were indifferent with regard to the three employments before the program was introduced, and since money income in B is now greater than before, it is likely that some individuals will be attracted from A and C to B. Interemployment labor-supply shifts will produce a new equilibrium as wages are driven down in B and pushed up in A and C. In equilibrium, annual money income in A will equal money income plus leisure income plus unemployment benefits in B; both, in turn, will equal money income and leisure income in C. While it is impossible to specify the new wage structure without independent information on demand conditions, it is possible to predict the *direction* of movements in the wage rates in all three industries. Moreover, one can predict that employment will rise in B and fall in A and C.

Assume now that there are seasonal fluctuations in the supply as well as in the demand for labor. Then it is entirely possible for equilibrium wage rates in seasonal employments to be less than in non-

seasonal opportunities. Yet given any equilibrium wage structure, if individuals in B now expect to receive unemployment benefits, while those in A and C do not, the real costs of work in the three employments are altered on the margin. It will still pay some workers in A and C to shift to B. Thus in general the effects of the program on the structure of wages and employment will be similar to those in the preceding simplified model. While the new wage structure will depend on demand conditions, together with the supply of seasonal and nonseasonal employments relative to the demand for them, wages in employments where individuals can expect a large benefit income will tend to fall (or, in the context of rising productivity, real incomes, and product demands, they will tend to rise more slowly than in other industries), and wages in employments where individuals can expect a negligible amount or no benefits will rise.⁵

II. *An Illustrative Unemployment Compensation Law*

Under the laws of all states, unemployment benefit income is the product of the benefit rate and the benefit period. In a handful of states, the benefit period is constant (that is, all eligible workers receive benefits for the same period of time, regardless of previous income or work experience), while the benefit rate varies with previous income to some maximum. In most states, both the benefit period and rate vary to some maximum with income [6, App. Tables 34, 35].

In Maine the benefit period is constant. An individual earning \$100 monthly and employed for only 2 months each year is not eligible for any benefits. A worker earning the same wage and employed from 3 to 6 months or more is eligible for benefits. The benefit rate varies directly with income (or months worked) while the benefit period is invariable at 23 weeks [9, p. 104]. For example, a worker employed 5 months at \$100 a month can expect to receive \$10 weekly for 23 weeks; unemployment benefits raise his total money income by nearly 50 per cent.

Consider a worker employed for 9 months. In this case, the benefit rate is higher, \$14, yet aggregate benefits are lower (\$182 compared with \$230) since the potential benefit period has declined. The greater the period of employment, the smaller the potential benefit period, and the smaller will be aggregate benefits.

Note that potential aggregate benefits necessarily reach a maximum. For a worker earning \$100 monthly in Maine, a maximum benefit income of \$253 is associated with 6-months employment annually. Moreover, in Maine the employment period which yields the maximum benefit income is invariant, regardless of the wage rate. For a worker

⁵ In a nonstatic world, the availability of benefits will also alter on the margin the decisions of new entrants into the labor force.

earning \$300 monthly, for example, the maximum benefit income (\$506) is still associated with 6-months employment. This relationship does not hold in every other state; actually, there are three possibilities—the employment period which yields the maximum benefit income may be constant (as in Maine), or may vary directly, or inversely with the wage rate. In South Carolina, for example, the employment period varies inversely with the wage rate [11, p. 25].

Nor is it true that the maximum benefit income at a *given* wage rate will be associated with the same amount of employment (income) in one state as in another. For example, when the wage rate is \$200 monthly in Maine, maximum benefits are associated with 6-months effort, as has been shown; in Alabama, with 7-months of employment [7, p. 39].

Continuing for illustrative purposes with the Maine law, it is clear that, following the adoption of the compensation program, industries (or firms) where the likelihood of being employed 6 months (but no longer) is greatest became more attractive to workers relative to other industries. Nonseasonal employments became relatively less attractive, as did highly seasonal employments (where aggregate benefits were small or zero). Note that “highly seasonal,” “nonseasonal” and “moderately seasonal” employments are defined in terms of a given unemployment compensation law. For example, “moderately seasonal” employments refer to industries or firms where the seasonal variation is such that unemployed workers can expect to receive approximately the maximum potential benefit allowed them under the law.

In the empirical section to follow, it is not possible to make such careful distinctions. Nor is it possible to reduce the problem to the level of the firm; data are too scarce.

One further complication ought to be mentioned: If it is possible to dovetail employments, two jobs in two industries, each in production for three months, will be just as attractive as employment in a third industry, operating six months, under the Maine law. Thus, two highly seasonal employments are as attractive as one moderately seasonal job. The analysis to follow necessarily ignores this problem. Available studies indicate, though, that seasonal dovetailing is not very significant.

III. *Unemployment Compensation and the Allocation of Resources*

Ignoring for the moment the effects of the payroll taxes which finance compensation programs, benefits interpreted as subsidies clearly tend to depress wages in moderately seasonal industries, and raise wages in very unstable and highly stable industries. Labor supply shifts will bring about this pattern of wage adjustment. Marginal costs

in the former industries will fall; in the latter industries costs will rise. Under conditions of competition, these cost changes will be reflected in price and output changes. As a result, compensation programs tend to subsidize the consumers of products of moderately seasonal industries at the expense of consumers of the products of highly seasonal and nonseasonal industries.

Suppose, however, that each industry and firm bears its full share of the burden of financing unemployment compensation. Assume, that is, that the payroll tax rate is such that the total tax yield in each employment equals the total amount of benefits paid out to workers in that employment who are seasonally unemployed. The effects on the allocation of resources will then hinge on whether the tax is shifted forward or backward.

If the tax is shifted completely back to labor, it is clear that unemployment benefits cannot be interpreted as subsidies. Benefit gains are wholly offset by lower net wage rates; there are thus no incentives for interindustry supply shifts. Of course, wage rates will fall for *all* workers employed in the industry, whereas only those workers actually laid-off receive any benefits. In this event, workers who are not laid-off, and those who are unemployed for brief durations, are subsidizing those workers who are laid off and those receiving larger benefits from longer seasonal unemployment.

The problem becomes more complex if the tax is shifted forward to consumers. If industry product demand were perfectly inelastic, labor demand would not fall after the rise in product price. Hence the familiar interindustry supply shifts would occur, altering the structure of wages and employment in the direction indicated earlier. If in the moderately seasonal industries the increase in cost due to the tax is precisely offset by the decrease in cost due to the increase in labor supply, then there would be no change in the price structure. In this event, unemployment benefits would not be subsidies. This would be highly unlikely, however; for it to be true, one would have to assume a very special set of labor demand conditions. What is clear is that the price of the product of a moderately seasonal industry would rise by less than the amount of the tax because of the decrease in labor cost. But this is all that can be said with any certainty.

If product demand is not perfectly inelastic, then incentives for interindustry supply shifts will be reduced since the (derived) demand for labor in moderately seasonal industries will fall.

In the real world, for a variety of economic and political reasons, the tax burden is not borne by industries and firms in proportion to their responsibility for creating seasonal unemployment. Hence it seems legitimate to interpret benefits as subsidies; yet unless product

and labor demand conditions are specified, it is impossible to predict the effect of the subsidy on the allocation of resources, that is, on consumer welfare. Just who subsidizes whom, by how much, it seems impossible to say. While their final impact on consumer welfare may be in doubt, interindustry labor supply shifts are nevertheless likely to accompany the adoption of an unemployment compensation program or an increase in the ratio of average benefits to average wages.

IV. *Tests of the Theory*

In this section we test the hypothesis that labor supply rose in moderately seasonal industries and diminished in nonseasonal and highly seasonal industries as a result of the unemployment compensation plans introduced throughout the United States in the late 1930's.

First, how significant are unemployment benefit rates relative to wages? How important is benefit income relative to market income? Average weekly unemployment compensation payments as a proportion of average weekly earnings of production workers in manufacturing ranges from 30 to 40 per cent; the figure for New York, for example, in June 1960 was 39 per cent [10, Table A-1] [16, Table 7, p. 82]. Average weekly wages were \$89.38; average weekly benefits were \$35.12. In California, the amounts were (in April, 1960) \$102.05 and \$39.32, respectively; in a poorer state, Alabama, \$76.03 and \$22.95 [12, Table C-8, p. 37] [16]. It is clear that compensation payments are substantial both in absolute amounts and relative to earnings.

How important is benefit *income* as a proportion of earned income? In New York, estimates have been made of the average benefit period in the apparel industry, a seasonal employment, during a period of relatively full employment. In 1955-56, for workers who earned between \$300 and \$499 annually, the average benefit period was 14.2 weeks. For those who earned \$3000 or more, it was 9.1 weeks. Average weekly benefits received by the first group were \$13.17; by the second group, \$32.32. Average benefit income, therefore, for the first group was \$187.01; for the second, \$294.11. Benefit income as a proportion of earned income for the lower paid and/or short-period employment group was roughly 50 per cent; for the higher paid, longer-working group, less than 10 per cent. Clearly, employment in the more unstable sectors of the apparel industry has its attractions, especially for those who place a high value on leisure relative to income (admitting seasonal fluctuations in the supply of labor into the analysis).

Did moderately seasonal industries become more attractive, and highly seasonal and nonseasonal industries less attractive to workers, following the introduction of unemployment compensation in the late

1930's? Were there actually interindustry shifts in labor supply? If so, were there noticeable effects on the structure of wages and employment? Because data are scarce for the period, only tentative answers to these questions can be reached.

Sixteen industries for which data are available were ranked with respect to seasonal variations in the demand for labor. The latter were measured by seasonal variations in lay-off rates. This is an imperfect, but seemingly adequate measure; a fall in demand, for instance, supply constant, is likely to be reflected in a rise in the lay-off rate (of course, hours worked may fall also). Thus indexes of seasonal variations in lay-off rates have been computed; we employed the average deviation as a measure of seasonal variations in the demand for labor.

Quit-rate data, but not wage and employment figures, are available for the industries for which lay-off data can be found. It is assumed that quit-rates reflect variations in labor supply. Thus we compared average quit-rates in moderately seasonal and nonseasonal industries (as determined by the average deviation of seasonal variations in lay-off rates) for each year, 1932-41. In 1937 and 1938 (when the compensation programs were introduced) the average quit-rate in nonseasonal industries was significantly (5 per cent level) higher than in seasonal industries. For no other years were the average quit-rates in the two classes significantly different [15, July, 1937, pp. 166-75, 156-57; May, 1942, p. 1197].

Next, seasonality (or seasonal instability) was inversely correlated (Kendall rank) with quit-rates for each year, 1932-41. The highest correlation when all 16 industries were included was for 1937 ($r = .267$). On the assumption that skilled workers have more specific investment in them compared with nonskilled workers, and hence are less mobile, we next excluded from the correlations two industries employing a relatively high proportion of skilled workers.⁶ The two highest correlations were for 1937 ($r = .384$, significant at 5 per cent level) and 1938 ($r = .318$). Clearly our results are consistent with our main hypothesis.

A more direct attack on the problem was made by employing indexes of seasonal variation in employment, relating them to changes in wage rates before, during, and after the introduction of the compensation programs. For our purposes, the seasonal indexes of employment (computed by Woytinsky [5]) have one main drawback; variations in employment reflect labor supply as well as labor demand changes. However, when the rankings obtained from Woytinsky's indexes are

⁶ A multiple correlation with seasonality and skilled workers as a proportion of all workers as independent variables was attempted. However, there was too much multicollinearity for the partials to have any meaning.

compared with those obtained from our lay-off indexes, a close correspondence results (as indicated above, this comparison can be made for only a handful of industries). This drawback, therefore, is probably not very serious.

Average hourly earnings were used as a measure of wage rates. Yet as Daniel Creamer has rightly pointed out [3, p. 4], the former are by no means the same thing as the latter. An increase in the amount of overtime work, for example, will raise average earnings, but not "the" average wage rate. However, there appears to be a close enough relationship between the two to warrant using the former as a measure of the latter.

The average percentage change in average hourly earnings in non-seasonal and highly seasonal industries was compared with that in moderately seasonal industries, for a series of two-year periods, 1933-1947.⁷ Highly seasonal industries were grouped with nonseasonal industries since our hypothesis is that both sets of industries became less attractive following the introduction of the compensation programs; thus wages should have risen more (or fallen less) in both groups relative to moderately seasonal industries. It was found that average hourly earnings rose significantly more (almost at 1 per cent level) in highly seasonal and nonseasonal industries relative to moderately seasonal industries *only* over the period, 1939-1941.

Next seasonality was inversely correlated with percentage changes in average hourly earnings for a series of two-year periods, 1933-47. Four industries employing a large proportion of skilled workers were excluded, as were the three highly seasonal industries. The only significant correlations were for 1937-39 ($r = .491$, significant at 5 per cent level) and 1939-41 ($r = .299$, significant at 1 per cent level).⁸ These results indicate that there was a tendency, directly after the insurance plans were adopted, for wages to rise more slowly in moderately seasonal industries. This pattern of wage adjustment was unique to this period; it is quite possible, therefore, that it was related to the newly introduced legislation.

Turning to the effect of the programs on employment, our findings

⁷ Earnings data were obtained from [12, Table C-1, pp. 54-83]. The dividing lines between the three groups (a total of 29 industries) are naturally somewhat arbitrary. The average deviations of the seasonals of three of Woytinsky's industries were extremely large; these we classified as highly seasonal. It is less easy to justify the line we drew between moderately seasonal and nonseasonal industries. However, experimentation with different classifications did not produce significant changes in our results.

For each group, the average was computed as follows:

$$(\Sigma \text{Average hourly earnings}_{t+1} - \Sigma AHE_t) / \Sigma AHE_t.$$

⁸ For 1939-41, N was larger; thus the smaller coefficient is significant at a higher level.

were negative. It does not appear that employment rose significantly more (or fell less) in moderately seasonal industries relative to highly seasonal and nonseasonal industries during the period 1937-41.⁹ Can these findings be rationalized? Seasonal industries—during on-season periods—generally work at much greater than full-capacity to avoid the expense of idle capacity during off-season months. Thus the demand for labor of seasonal firms may very well have been quite inelastic, even during years of substantial unemployment. Thus supply changes could be expected to be reflected in wage changes, but not in variations in employment.¹⁰ Another explanation may be that the data are simply not sensitive enough to record the shifts in the labor supply.

A study of the experience in one individual state seems to bear out the latter explanation. In Delaware, workers seem to have responded to increases in unemployment benefits along the lines predicted by the theory. Delaware is one of the few states where changes in the maximum benefit rate have not been small, nor made at one- or two-year intervals. Changes in the Delaware law have been made every five or six years, when the increase in the benefit structure has been substantial [8]. In 1955, for example, the maximum benefit was raised by 40 per cent; for 1955-56, the rank correlation coefficient of seasonality on percentage changes in employment was .450. Apart from the period 1938-39 (directly following the introduction of Delaware's compensation plan), when the correlation coefficient was .60, this was the highest coefficient recorded for any two-year period, 1937-1957. There were no other significant correlations, nor were there, excepting 1949 when the maximum benefit was raised by over 30 per cent, any large changes in the law. Employment in seasonal industries in Delaware appears to be greater than it would have been in the absence of unemployment compensation legislation.

V. Conclusion

The data on the whole seem to support the conclusion that the compensation programs had a once-and-for-all effect on the allocation of labor following their introduction in the late 1930's. However, the reallocation effect implicit in the programs has probably not been of large proportions; as all students of the labor market are aware, monetary incentives must vie with many other kinds of inducements when it is a question of choosing the kind and place of work. It is highly

⁹ Since for the country as a whole the average-benefit/average-wage ratio does not rise significantly after the original impact of the state plans, more recent years have been excluded from the analysis.

¹⁰ Our findings with regard changes in average annual *earnings* are consistent with this hypothesis.

unlikely that many workers would change their jobs, and possibly their skills, for a few hundred dollars annual zero-effort income. What is more likely is that marginal workers, married women, perhaps some new entrants into the labor force, together with some part-time family workers, found seasonal employment more appealing than it would otherwise be.

Assuming that in the future unemployment-compensation plans will play a bigger anticyclical role, the average-benefit-income/average-wage-income ratio will no doubt rise. If the preceding analysis is correct, further reallocations of labor will occur. Is it possible to design a program to prevent this? One simple solution would be to reduce average benefits and at the same time make the benefit period indefinite. Thus seasonally unemployed workers would be automatically segregated from those "involuntarily" unemployed; aggregate benefits would be redistributed away from the latter to the former. Meanwhile, it would be unnecessary to enlarge the total unemployment compensation funds.

This plan would however reduce the effectiveness of unemployment compensation as an automatic stabilizer; in early stages of a recession total benefits paid out to cyclically unemployed workers would be smaller than under existing programs. Here, apparently, is one more case where policies promoting greater economic efficiency clash with those designed to reduce economic instability. Existing plans may, in fact, be the best compromise between the two.

REFERENCES

1. R. ALTMAN, *Availability for Work: A Study of Unemployment Compensation*. Cambridge 1950.
2. P. W. CARTWRIGHT, "Unemployment Compensation and the Allocation of Resources," in M. Abramovitz *et al.*, *The Allocation of Economic Resources*, Stanford 1959.
3. D. CREAMER, *Behavior of Wage Rates During Business Cycles*, Nat. Bur. Econ. Research, Occas. Paper 34. New York 1950.
4. J. O'CONNOR, "Anticipated Employment Instability and Labor Market Equilibrium," *Quart. Jour. Econ.*, Feb. 1961, 75, 128-32.
5. W. S. WOYTINSKY, *Seasonal Variations in Employment in the United States*. Washington 1939.
6. ——— and Assoc., *Employment and Wages in the United States*. New York 1953.
7. STATE OF ALABAMA, *Alabama Unemployment Insurance Law, 1957*.
8. STATE OF DELAWARE, A. Stetser, Executive Director, Unemployment Compensation Div., letter and attachments, May 4, 1959.
9. STATE OF MAINE, Dept. of Employment Security, *Financing Unemployment Insurance in Maine*. Bangor 1958.

10. STATE OF NEW YORK, Dept. of Labor, *Labor Market Rev.*, June 1960, 13.
11. STATE OF SOUTH CAROLINA, *South Carolina Unemployment Insurance Law*, 1958.
12. U.S. DEPT. OF LABOR, Bur. Labor Stat., *Employment and Earnings*, July 1960, 7.
13. ———, *The Extent and Nature of Frictional Unemployment*. Washington 1959.
14. ———, *1947 Handbook of Labor Statistics*. Washington 1947.
15. ———, *Mo. Lab. Rev.*, July 1937, 45; May 1942, 54.
16. U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE, *Soc. Security Bull.*, Aug. 1960, 23.

MONEY AND CREDIT

A Review Article

By LORIE TARSHIS*

This Report¹ clearly invites review. Generously financed, written by (or for) a group of distinguished men who were "broadly representative of the various economic and social sectors of American life."² and who could call upon the services of an excellent staff and an advisory board of acknowledged experts, it was destined for best-sellerdom. It was extravagantly publicized at birth, the President accepted a copy, the Joint Economic Committee of the Congress devoted several days to it, and its back cover informs the reader that it is "the first comprehensive survey in half a century of public and private financial institutions, policies and practices in the United States." It was clearly born with a silver spoon in its mouth. But what about its foot? Does that unlikely object by any chance accompany the spoon?

A volume such as this can serve one or more of three different functions. It may, for one thing, make contributions to the science, at the very least, by bringing the newest developments in the field together, relating them to one another and considering their implications for policy—as, for example, do the survey articles in this *Review*. Secondly, it may influence policy, not so much because of what it says as because its authors carry authority with the press or Washington. Finally, the Report may be valuable as an educational tool—a document to which students can be referred for a clear and accurate account of the financial sector and its relation to other sectors—in much the way that the Report of the Radcliffe Committee is now used.

Money and Credit, to judge it in relation to these possible contributions, but in the reverse order, is unlikely to be useful to the student simply because most of its conclusions are presented with very little supporting analysis. As a political document it may be far more valuable, since the public is likely to be more responsive to the news that a particular view is endorsed by a number of well-known figures than by the information that it is supported by "the experts." Finally, as a technical document to which the professional economist may turn in the hope of finding fresh insights, the Report is quite lacking in value. It could have been written twenty years ago, though

* The author is professor of economics at Stanford University. He is indebted to J. G. Gurley and E. S. Shaw for helpful discussions.

¹ *Money and Credit: Their Influence on Jobs, Prices, and Growth*. The Report of the CED Commission on Money and Credit. Englewood Cliffs: Prentice-Hall, 1961, Pp. xiv, 285.

² Except the academic, I am compelled to note.

it would at that time have failed to secure the endorsement of a group "broadly representative of the various economic and social sectors. . . ."

The reviewer, in fairness to the authors, must bear in mind that the several possible objectives—education, persuasion, and technical contribution—like other well-known sets of goals, may not be completely consistent. Thus, inadequacy on the technical front may have been the price that had to be paid to secure the support of enough members to make the volume politically persuasive. Likewise much less analysis than would have been optimal for student use may have been thought desirable because the volume would be widely read only if it were short. The Report appears to represent a compromise, not only because it had to allow for a wide range of opinion on policy, but also because it sought various goals which were somewhat in conflict. For that reason it is scarcely appropriate to judge the Report from a narrowly technical standpoint alone; it was not written primarily for the technical reader.

Still, the economist has a right to register his disappointment, at least in general terms. For if the Report cannot be expected to carry him across old frontiers, it should be at least competent up to the borders of knowledge reached two decades earlier. And on this score I do not believe it deserves any more than a B+. Perhaps this is not surprising, but considering the inputs available (though not necessarily used) it is nevertheless discouraging.

The available inputs were generous in amount and high in quality. In addition to the members of the Commission and the Advisory Board there were 21 staff economists, and about 100 papers were especially written for the use of the Commission by outside experts.³ As a matter of fact, the reviewer, confronted by the long list of distinguished names and intriguing titles available to the Commission must present any criticism of the recommendations very tentatively; for after all maybe a Tobin or a Duesenberry has made a convincing case for them which was available to the Commission but which the reviewer will only be able to read some months hence.

Nonetheless it requires excessive modesty on the part of the profession to concede that all is well. One gains the impression that at certain points where expert knowledge was needed, it was not used. This was apparently deliberate. T. O. Yntema, a member of the Commission and in his own right one of this country's distinguished economists, wrote in a statement he submitted to the Joint Economic Committee, "We cannot leave the great problems of our economy to the experts."⁴ If this means that the responsibility in a democracy for solving them is public rather than private, it is correct, but it surely ought not to mean that recommendations for meeting problems ought to disregard the views of the experts. Yet there are too many instances in which the Committee's recommendations are sharply at odds with expert opinion, and I believe that a great opportunity has been muffed.

The staff of the Joint Economic Committee listed 77 recommendations in

³ Some of these papers are to be published.

⁴ *Hearings* before the Joint Economic Committee on Review of Report of the Commission on Money and Credit, August 14-18, 1961, 79th Cong., p. 477.

the Report and a cursory check disclosed at least 20 more. Naturally many of them can be commended, for example that urging elimination of the gold reserve requirement against Federal Reserve liabilities, or that suggesting that the President be granted limited conditional power to make temporary countercyclical adjustments in the first-bracket rate of the personal income tax. There are others having to do with the structure and organization of the Federal Reserve System which are intended to improve coordination within the system or between it and other public agencies, and these look good on the surface. But even in this area some of the recommendations have met with the strong opposition of Alan Sproul, whose opinion must be considered with special attention.

Turning our attention to matters of interest to the general economist, we have selected five areas for more detailed comment.⁵

I: *Consistency or Conflict among Goals*

First we should question the optimism of the Commission in asserting that the various objectives of economic policy—"reasonable" price stability, "low" levels of unemployment and an "adequate" rate of economic growth—to which it later adds a satisfactory international payments balance, and some others—are mutually consistent. Of course they can be made to be consistent if "adequate, reasonable, and low" are interpreted sensibly, or "if we do not expect the impossible for each" (p. 45), but this presumably means that compromise will be needed and that goals have to be tempered. If this is what is meant by "the basic compatibility of the three objectives" (p. 12), it may provide much less ground for optimism than the Commission claims; and as a guide to policy the Commission's statement of objectives may be nearly useless. Unfortunately this question of possible conflict is a real problem and its solution requires hard analysis, not verbal trickery.

Actually the Commission shows more restraint than its early statement of optimism would lead one to expect, pointing out for example that "the costs in terms of unemployment and lower growth would be so great from trying to correct our balance of payments deficit by general monetary and fiscal policies that alternative means should be sought to achieve the necessary balance" (p. 227), and that "attempts to reduce the level of unemployment below 4 per cent by stimulating aggregate demand through monetary, credit, and fiscal measures *alone* will result in an increase in the Consumer Price Index" (p. 39). This leads it to put forward a number of recommendations relating to other sectors of the economy—for improving mobility in labor markets, strengthening competition, persuading foreign governments to lower tariffs and so on. While these steps, if they can be taken, may reduce the possibility of conflict between these various goals, it is still an open

⁵ It would of course be possible to expand this treatment very considerably. How carefully, for instance, did the Commission investigate the desirability of "constant purchasing power savings-bonds"? No reasons are given for rejecting their use, so the reader must either accept the authority of the Commission, or of some unnamed expert. There is much too much of this kind of thing. The Radcliffe Committee, by comparison, in presenting arguments in favor of its recommendations prepared a far more useful report.

question whether conflict will not arise even so and compel awkward choices in the future.

This is not to say that these conflicts confront us at the present time. Our economy may still be occupying a position well inside the highest possible 5- or 6-dimensional indifference curve it is technically able to reach, and if so we could get more of every objective simultaneously. But this does not mean that choice need never be made, and the rather casual arguments the Commission presents to the contrary are not at all persuasive.

II. *The Effects of Changes in Money and Credit Markets*

The Commission could scarcely review the workings of the financial sector without looking into the effects of changes in credit conditions upon the level of activity. But on this critical issue one finds a restatement of clichés which have no more authority than that conferred upon them by their age, together with statements that deny them completely. To illustrate: the Commission at one point argues that "the sensitivity of demand for real assets to a change in interest rates . . . depends on the relative importance of interest charges and amortization payments in the total cost of the project" (p. 51). I assume that this means that the sensitivity is great for long-lived projects and is very little for short-lived ones. But on the next page we read that: "Fragmentary evidence, however, indicates that some kinds of investment are sensitive to changes in interest costs"; and elaborating, ". . . if price increases are not anticipated, investment in inventories seems likely to be somewhat sensitive to interest rates and credit terms" (p. 52). Does the term "fragmentary evidence" in this context mean unacceptable? And why should the *sensitivity* be different when prices are expected to rise? Is there any evidence for this, fragmentary or otherwise? Or reason for it? If not, is this not one of the problems of the economy that is too important *not* to be left to the expert?

Again, after salvaging some of the theoretical argument for expecting some sensitivity of investment to the interest rate (the first two paragraphs, p. 52), the Commission writes: "What little relation there might be is reduced by the tax deductibility [*sic*] of interest payments, which, at present corporate tax-rates, more than halves the after-tax effect of a given change in the interest rate" (p. 52). It then presents a counterargument which is scarcely a model of clarity or relevance, and concludes: "A change in interest rates thus does change the incentive to invest regardless of whether it is computed on a before-tax or after-tax basis."

It must be admitted that if the Report is confused at this critical point, it may merely reflect the unsatisfactory state of expert opinion on this subject. But the question still remains: how can the Commission *endorse certain policies* without having at least a consistent view as to what they will do?

III. *Bills-Only, Debt Management, and Cross-Elasticities of Demand*

Our next concern is with the once controversial questions of bills-only and debt management generally. The Commission's view which places some reliance upon debt management as a stabilizing weapon, and which urges an

end to the bills-only policy of the Federal Reserve, is implicitly based upon the belief that the cross-elasticities of demand for different kinds of government securities is low. In accord with this belief the structure of interest rates will be at least moderately sensitive to the composition of demand and of supply—whether short-term bills or long-term bonds are made available, and likewise which securities are most in demand. It is, incidentally, difficult to see any justification for a bills-only policy since if the cross-elasticities of demand are high, it makes no difference which securities are bought and sold by the Federal Reserve, and if they are low the policy makes sense only when it is desired to move short-term but not long-term yields. Thus it is easy to sympathize with the Commission's urging that that policy be dropped.

However, there is some danger that the Commission has been overly sanguine about the probable effects; and this may be misleading. The Commission is persuaded that the authorities by dealing in all maturities, whether in managing the debt or in open-market dealings of the central bank, can bring about significant modifications of the rate structure. And this would constitute a real advantage, according to the Report, since it would permit us to encourage growth, which requires low long-term interest rates, while preventing a movement of short-term capital to other countries, which requires high short-term rates.

This view, however, seems to be unduly optimistic, if it is thought that a significant modification can be obtained through operations of the customary magnitude. Of course, if the Federal Reserve buys long-term securities and the Treasury issues short-term securities, there will be some shift, but unless the scale of operations is to be far higher than is now thought to be acceptable, it is likely that the effect on the rate structure will be pretty slight.

Actually the Federal Reserve dropped its insistence upon bills-only before the Commission's Report was published, and between June 1960 (when the policy was still in effect) and October 1961 (after it had been waived), the Federal Reserve sold short-term issues heavily, while buying longer-term ones. Furthermore, during the past year the debt structure has been somewhat modified, with the sharpest change consisting in a rise in the proportion of issues with maturities of less than a year. In line with the Commission's analysis we should have expected a rise in short-term, relative to long-term rates. Actually, however, while the short-term rate fell from 2.64 per cent to 2.35 per cent,⁶ the long-term rate fell by an almost infinitesimal amount—from 3.99 to 3.98 per cent.⁷ This can hardly be described as a "shift" (in the desired direction, anyway) in the rate structure, but then the results are not really surprising. After all, the Federal Reserve is only one, and not necessarily the chief, trader in government securities; the commercial banks in the same period bought more short-terms than the Federal Reserve sold. While the recommended operations can be expected to modify the rate structure from what it would have been in their absence, to imply that they can effect

⁶ The rate on 3-months bills, newly issued, in June 1960 and October 1961.

⁷ The yield on U.S. long-term bonds, maturing in 10 years or more.

a *significant* shift, of the kind needed to stimulate private investment and attract short-term capital imports simultaneously, is to present a wildly exaggerated claim.

IV. *Controls over Nonbank Financial Intermediaries*

The Commission has had "first chance" to grapple with the problems for policy posed by the rapid rise (or more accurately, by economists noticing the rapid rise) of nonbank financial institutions. In this respect, too, the treatment is less than adequate. While recognizing their rapid growth, the Commission on the basis of what it admits to be fragmentary (again!) evidence finds that there is no need to require these institutions to hold reserves in the form of deposits in the Federal Reserve Bank against their liabilities in order to make money and credit policy more effective.

But while the Commission evidently believes that all financial institutions are equal, in its eyes some are more equal than others, for at the same time it urges that all insured commercial banks be required to join the Federal Reserve System in order to "overcome the slippage in monetary control" (p. 77) which may now occur. It admits that this is not a serious danger principally because the deposits held by nonmember commercial banks amount to less than one-sixth of the total. But nonbank financial intermediaries which in 1900 provided only 35 per cent of all financial assets, by 1958 provided 55 per cent. Are we to suppose that their activities do not contribute a potentially serious obstacle between Federal Reserve policy and the goals it seeks to achieve?

The Commission, for one, believes otherwise. In a decidedly curious display of reasoning it holds that since households tend to shift from bank deposits, cash, and investments to shares in savings and loan associations during depression, there is no additional inflationary pressure to combat during expansion. But surely this conclusion rests upon the notion that household liquidity becomes frozen in these shares and will not be used when the authorities want to restrain demand.

V. *The Balance of Payments and International Liquidity Arrangements*

We have ranged in our criticisms over all the chapters that bear upon the domestic economy. We finally consider the Commission's handling of the international aspects of monetary policy, which we find inadequate, misleading, and occasionally reckless.

The Commission implicitly recognizes the fact that our payments deficit is not only a consequence of greater inflationary pressures in this country than elsewhere. The failure of receipts to match payments (for financing imports, capital exports and government loans and grants) partly reflects structural maladjustments. Apart from obvious, but probably unimportant steps like providing better market information and export credit facilities, we must rely upon structural changes, including a speeding-up in the rate of increase of productivity, if we are to continue buying, in this extended sense, on as large a scale in the future. But the usual rules that the discipline of the

balance of payments imposes would raise serious obstacles to getting the kind of adjustment required. The Commission must be commended for emphasizing this point.

But I think the Commission minimizes the difficulties that must be faced. First, it shows an entirely unjustified optimism in seeing it as "likely that there are enough specific measures other than restrictive payments controls and changes in the exchange rate structure available to the United States and to foreign countries to permit attainment of a satisfactory balance in our hard-core accounts without a sacrifice of domestic and international objectives" (p. 231). This may be so, but in the absence of any argument in support of the conclusion it reads more like wish than thought.

Its treatment of the possibility of exchange depreciation is, I believe, poor and somewhat reckless. The argument might be appropriate for a country which used the currency of another country as an international reserve; it is completely inappropriate for a reserve-currency country; and a depreciation, even if it took the form of no change in the dollar price of gold, but a reduction in gold prices in all other currencies would do great damage to the whole payments mechanism upon which the trade of the West has been based.⁸

In order to reduce destabilizing short-term capital movements to a minimum, it is necessary to create the confident belief that exchange rates will not change; and this will be a difficult lesson to teach if changes occur from time to time. Indeed, if dealers should become conditioned to expect changes, it probably would make more sense to leave the whole complex scheme of quasi-fixed exchange rates altogether, and allow rates to be completely flexible. For with rates that are only nominally fixed, strains build up which are avoided with truly fixed rates, and yet very little of the advantages that flexible rates can secure become available. Indeed even the rather benevolent attitude taken by the Commission on this matter seems to me to be dangerous. Like "man bites dog" an academic economist cannot be expected to pass up the chance to rap the knuckles of bankers and business executives for irresponsibility and recklessness.

When the Commission comes to consider the international liquidity problem one feels that, as the Vice-Chairman in one of his footnotes of objection writes: (p. 231) ". . . these sections deal with a subject that requires profound knowledge and lengthy study in cooperation with experts of foreign countries. Moreover, CMC is not and should not necessarily be equipped to handle this subject. . . ." Unfortunately, it is hard to disagree; though there is no reason to suppose that the gap in the members' understanding of these matters could not have been filled as capably as it was in regard to most other matters by the expert staff, consultants, and special studies to which they had access.

While the role of reserves and international liquidity is set out correctly

⁸ The one advantage to be gained by appreciating all other currencies against gold is that it would not encourage speculative movements out of the dollar into gold. But gold mining would be discouraged and the value of monetary gold stocks except in the United States would be reduced, and these developments in a world that relies heavily upon gold for international reserves would be bad. Finally speculation against the dollar and in favor of other currencies would be encouraged.

in a formal sense, a good deal more should have been made of the point that the likelihood of deficits induced by structural imbalance⁹ greatly increases the need for reserves. Such imbalances can only be cured slowly even in the best of circumstances. And circumstances will not be at their best if liquidity is insufficient to permit the deficit country to finance a sustained deficit while maintaining prosperity at home.

Next, attention should have been focused on the way in which reserves grow nowadays. Apart from additions to the monetary gold stock of the nonreserve-currency countries¹⁰ their reserves can only grow by the amount of the *deficit* of the reserve-currency country. The CMC's statement that it was the strong balance-of-payments position of the United States that induced foreigners to acquire dollars as an investment may be true. But if "strong" means surplus, the result would have been to reduce the supply of dollars they *could* acquire. A surplus in our balance of payments, as we measure it, will only lead to reduce reserves for other countries.

But this exposes the problem. The U.S. balance of payments must be strong if foreigners are to continue to hold dollars as a reserve currency, and indeed to be willing to expand their holdings at the required rate; at the same time it must be in deficit if they are to come into possession of these additional dollars. Put this way, it is clear that no solution is possible. There is, however, a way out if while the deficit rules our gold stocks remain high enough and, after a certain point has been reached, increase in line with our increasing dollar liabilities. Whether a policy can be designed to meet this goal is by no means certain but it does suggest that to concentrate upon the balance of payments, as is now the mood, is to disregard at least some of the essentials. And the Commission, which at least notes the desirability of fundamental reform, deserves credit for its concern with these matters.

The Commission was apparently intrigued with the possibilities of operating on the forward foreign exchange market as a device for preventing short-term capital exports from the United States when domestic conditions require lower interest rates in this country than abroad (p. 237). I am doubtful that such an action will do anything except: (1) when it can influence expectations—that is, when it can persuade speculators that the dollar is likely to appreciate on its own; or (2) in so far as we use our holdings of foreign exchange (if we have any) or arrange for credit from, say, the Swiss National Bank to cover the contract. But presumably such a credit would have been possible even if dealings had been confined to the spot market, and it would have been equally effective as an offset. In short, I doubt very much that the Commission really has a new weapon at all; more probably it has been taken in by the current *mystique*—that it is all a matter of a delicate touch and a fine sense of timing.

VI. *Concluding Remarks*

My comments to this stage have been mainly critical. In fairness I must point out that the Report covers many areas of concern very adequately. Its

⁹ When, it should be noted, the surplus countries have no reason to seek a return to equilibrium or to want the structural adjustment that the deficit countries need.

¹⁰ Not obtained by converting reserve currencies into gold.

recommendations in the field of fiscal policy are well-drawn and imaginative, and even though they may lack proper analytical backing, they are well in advance of what might have been anticipated. Its recommendations for the reorganization of the Federal Reserve System, on the whole, point to increased efficiency and a better coordination with the Treasury and other government agencies. Some useful points are made in connection with monetary policy although it comes as something of a surprise to find in a report on money and credit that the contributions in this field (and in the field of debt policy) are so slight.

But the main value of the Report lies elsewhere: it is not so much in *what it says* as in *who says it*. It is likely to have an influence—and indeed already has demonstrated that to be so—far beyond that which its own intrinsic merits could win for it. And we can be grateful that by and large its influence has been for the good. Finally, in defense of some of its recommendations, it must be conceded that in at least some matters, the profession could not have provided unanimity of opinion for the Commission. Unfortunately there is a fairly wide dispersion of expert opinion in regard to a number of issues about which the Commission was compelled to formulate its judgment. This the individual reader must take into account when he finds something to which he takes objection.

THE THEORY OF CAPITAL

A Review Article

By VERNON L. SMITH*

W. H. Auden has said that every author probably considers his past work as falling into four classes: first, there is the unmitigated rubbish which an author regrets ever having produced; then there are the good ideas which, he painfully realizes, came to little because of his own incompetence or impatience (for publication?); third, there are the works to which he has no objection except their lack of importance; and finally, there are the products for which he is honestly grateful. Auden argues that it is the third class which must inevitably form the bulk of any collection; were the latter to consist of works falling in the fourth class alone, the volume would be too depressingly slim!

The Theory of Capital [14] is a thick collection of previously unpublished papers which, in deference to Auden's last point, has the potential advantages of multiple authorship. Though it is possible that the judgments of these papers by their respective authors already form a distribution over all of Auden's classes, I suspect a remarkably large number of them will be judged by the profession to fall into the final category. In my opinion, this book contains several important papers, and represents a valuable contribution to the resurgent interest in capital theory. I cannot commend it more highly than to suggest that every economist with analytical or empirical interests in capital theory should have a copy on his bookshelf.

This book constitutes the long-awaited proceedings of a conference held by the International Economic Association on the island of Corfu, September 4-11, 1958. Thirteen papers were discussed in eleven three-hour sessions. The papers were circulated in advance (a characteristic of the real workshop conference), and generally each session began with the author or a discussant briefly summarizing the main points of the paper, and the discussant providing his impressions, critical comments or extensions of the paper. In addition to these thirteen papers, the last quarter of the volume provides a fascinating and frequently lively summary of these discussions.

There is little reason to attempt the difficult task of providing an adequate summary of each of these papers. There is a thoroughly candid five-page over-all summary of the papers by F. Lutz in the introduction to the volume.

*The author is professor of economics at Purdue University. Assistance in the preparation of this article was received under Grant No. G-16114 to Stanford University from the National Science Foundation while the author was a visiting professor of economics at Stanford University, 1961-62.

Then there are discussions of the individual papers, which generally lead off in each case with a succinct review of the paper. The interested but busy reader is advised to consult these summaries. In several cases even the thorough reader will find it useful to read these summaries before reading the corresponding papers. A striking feature of many of these papers is their close relationship with the work of other authors and with the previous and subsequent work of some of the writers who contributed to this volume. Therefore, besides summarizing my impressions and criticisms of some of the ideas expressed in these papers, I shall try where possible to provide the reader with a guide to other important recent literature which bears immediately upon the work of this volume.

It is appropriate that the introductory paper for the conference, "The Essentials of Capital Theory," should be the product of Friedrich Lutz. This paper provides a survey of neoclassical, macroeconomic and Swedish dynamic capital theories by way of establishing the conference theme. Only the productivity side of neoclassical capital theory is surveyed; that is, the works of Wicksell and his followers Åkerman, Lindahl and Hayek are treated, but the supply side of the analysis found in the writings of Böhm-Bawerk, Fisher, and their followers is omitted. This omission is of some importance, for Lutz reports that no agreement seems to have been reached as to the choice between maximizing the internal rate of return and maximizing net present value.¹

The disagreement, it seems to me, arises largely as a consequence of ignoring the supply side. As Hirshleifer [9, pp. 329-30; 346-52] has shown, there appears to be little doubt that, provided the appropriate associated Fisherian borrowing or lending decisions are made, and we rule out certain cases which combine the difficulties of nonindependent investments and imperfect capital markets, the present value rule is universally correct. The internal rate of return is not generally correct on a Fisherian analysis and can lead to quite poor decisions in special cases.

Lutz does say that he thinks Fisher's criterion is more realistic and is preferable on theoretical grounds, but I think the case can be stated more strongly. By way of illustration, Lutz gives the tree-harvesting example in which maximization of net present value leads to the Jevons condition, which is independent of the cost of inputs, while maximization of the internal rate gives a condition (average rate equals marginal rate) dependent upon the costs of inputs. In the discussion, Samuelson's critique of this is to point out that with free entry, net present value becomes zero, and imposing this condition causes the two criteria to converge with market, marginal, and average rates all equal.

¹ However, in the discussion of Lutz's paper (as reported in the introduction to the book), there seems to have been fairly good agreement among the conference participants that Fisher's net present value is the valid maximization criterion. Except for Samuelson's paper and the ensuing discussion little mention is made of Fisher in this volume. Capital theorists commonly say little of Fisher, except to state that his contributions were very great. Leontief once suggested that this state of affairs was due to Fisher's great clarity of logic and writing style—you must write obscurely to establish a following and a school of thought!

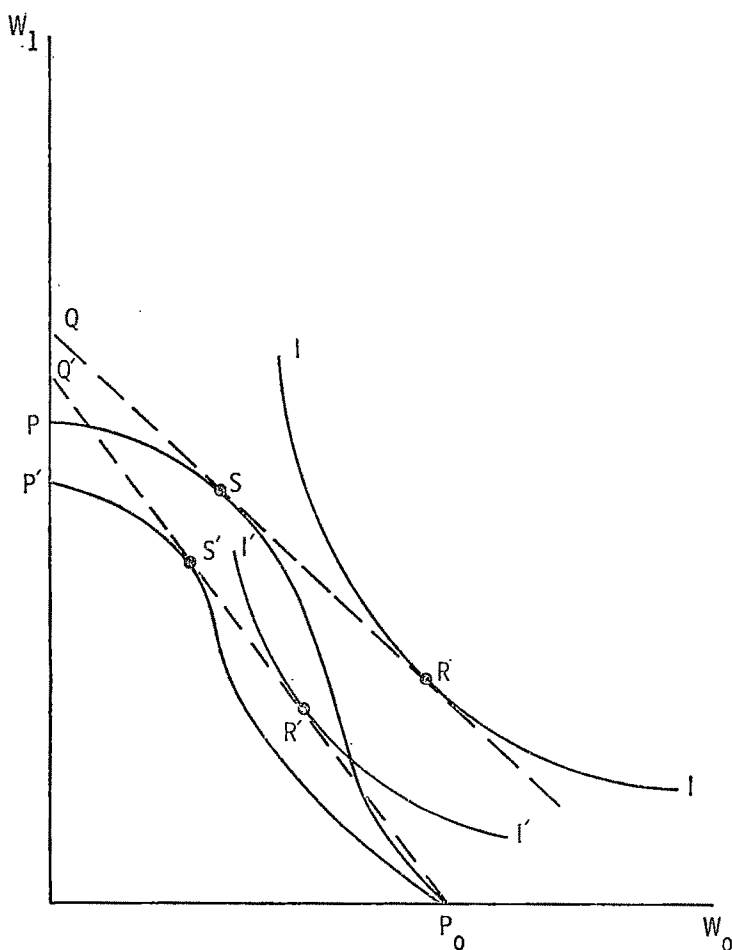


FIGURE 1

This long-run adjustment can be illustrated with the Fisherian two-period analysis, as shown in Figure 1. W_0 is present and W_1 is future wealth available for consumption; I and I' are time-preference indifference curves; and P_0P and P_0P' are respectively the short-run and long-run productive investment opportunities open to the individual, in which increasing, then decreasing, returns to investment are assumed. Given the market borrowing and lending possibilities represented by the exchange-opportunity line QR , the individual will reduce his current endowment of wealth available for consumption, P_0 , and via direct investment move to S , then borrow in the open market to replenish his current consumption until he reaches the full equilibrium at R . This is the short-run adjustment with the average internal rate (which would be given by the slope of a straight line through P_0S) exceeding the marginal and market rates. But as others enter to exploit these physical

investment opportunities, input costs rise and, in general, the market rate of interest rises. The result is a decline in the P_0P frontier, and an increase in the gradient of the exchange-opportunity line until, say, the individual ends up with direct investment activity represented by S' , and enough borrowing to provide the full equilibrium at R' . Hence, the market rate and the marginal rate converge to the average rate at a level given by the slope of $P_0R'S'Q'$.

As a reader's guide to the Hicks and Samuelson papers, it should be pointed out that they ought to be read in conjunction with the important earlier papers by Hicks [7] [8] and Samuelson [15] on the measurement of income. The Samuelson paper extends his earlier work on measuring income to a model in which the phenomenon of investment is explicitly recognized. However, it is a one-sector model and such models can be deceptive in the sense that the world of only one product, with two uses (consumption and investment), slides over some of the interesting problems of macroeconomic capital theory. For this reason it is hardly surprising that there turns out to be no ambiguity in measuring income in the sense of Haig and Marshall (i.e., "income" is society's total flow of net product or earnings including investment and consumption, as opposed to consumption only, which was Fisher's concept of income). The production possibility functions of society for consumption and investment are -45° lines. In such a world it would appear that the distinction between the Fisher and Haig-Marshall definitions of income is considerably strained. If investment and consumption goods are indistinguishable, I should think that Fisher would be entirely willing to agree that "income" increases with net product whatever the subsequent allocation between the two uses. The stock of capital is always instantly available for dinner table consumption.

As a consequence, Samuelson, after providing a superb exposition of a model of macroeconomic growth and distribution in a one-product world with exponential capital mortality and constant returns-to-scale, proceeds to drop the model when it comes to a discussion of the evaluation of "social income." He then introduces [14, p. 45] increasing marginal rates of sacrifice of investment to obtain more consumption. This surely implies at least two sectors in which investment goods are just not available for consumption, short of gradual transformation through production into consumers' goods. This irreversibility or inflexibility that follows the commitment of resources to the capital use provides the basis for the economically meaningful distinction between the Fisher and Haig-Marshall definitions of income.

But in the end, as Samuelson shows, the real difficulty in trying to compare the welfare states of societies that produce capital goods is the simple fact that the latter are not, presumably, produced for their own sake, but for the consumption goods they allow us to produce. Hence, the usual index number reasoning that we apply to a multiproduct consumer-good world fails in this dynamic context. Samuelson ends up, as the reader might expect, with a wealth-like concept of welfare and rejects *all* current-income concepts. What we do, it turns out, is to compare the Fisherian present discounted value of future consumption levels in different situations, provided now that we use

not only the same prices but also the same interest rates in making the revealed preference comparison. But we are left with the pessimistic view that, though the solution is clear in theory, it contains so much futurity that it is practically impossible for the theory to help the statistician charged with the responsibility of coming up with a meaningful measure of "social income."

Fellner's paper is devoted to an "Appraisal of the Labour-Saving and Capital-Saving Character of Innovations." The analysis "assumes that the quantity of capital is measured by some method which enables us to distinguish between changes in this quantity and changes in the productivity of capital" [14, p. 58]. I question whether this distinction has any operational meaning at the aggregate level, but the theory is quite clear and conveys a useful understanding of the issues involved. The last part of Fellner's paper and all of the Domar paper deal with data on the U.S. capital-output ratio, so I shall deal with them together.

Fellner is concerned with implementing his theoretical analysis with the 1870-1950 data now available on U.S. capital-output ratios, and drawing conclusions about the character of innovations in this period. He is properly and commendably cautious concerning such empirical implementation, reporting that he believes "the results obtained . . . are not useless" [14, p. 58-59]. I am much more skeptical, as will be explained. Domar is concerned almost exclusively with a straight report on the U.S. capital-output data, wisely leaving open the issue of explaining these data.²

My skeptical inclination concerning the usefulness of these data in capital analysis has been heightened by Paul Anderson's recent paper [1]. Anderson gives challenging arguments for explaining the trends in U.S. capital-output ratios, both at the aggregate level and in manufacturing, entirely in terms of "technical" factors. He argues that the declining trend in constant dollar aggregative ratios from 1897 to 1949, based on Goldsmith data, is due to the rise in the capital asset deflator relative to the output deflator. The reason for this relative rise is that final output is priced on a "unit" basis, while capital assets are priced on an elements-of-cost basis. Hence, if a constant amount of labor and materials goes into a capital asset, its deflated value is considered constant even though it produces twice as much output. This criticism is not necessarily devastating, for it just might be acceptable, at the aggregate level, to measure capital in terms of the value of the inputs required to produce capital, so long as we remember that this is what we are doing, and that it may not be possible to do "better." Of course, one result of this will be to confound improvements in inputs, especially labor skill and educational level, with improvements in hardware, thereby causing trouble for the kind of distinction that Fellner's theory requires.

In manufacturing, Anderson argues very convincingly that the rise in the capital-output ratio from 1880-1919 was the result of more complete reporting of capital assets in successive censuses, and that the fall after 1919 is largely explained by the bookkeeping procedure of subtracting annual depreciation, the incentive for which was created by the corporate income tax.

² But Domar indicates that he believes the trends in these data have not been spuriously produced [14, p. 105].

This tax was actually introduced in 1909 but the rates were quite low (on the order of 2 per cent) until the war years, when in 1918, for example, the effective rates reached about 40 per cent.

Several papers in this volume deal with or touch upon the problem of measuring capital, particularly those of Lutz, Hicks, Fellner, Barna, Domar and Hoffmann. I have mixed feelings on what is generally referred to as the "problem of measuring capital." For one thing, there seems little reason to single out capital, in the sense of durable goods, as producing some kind of special problem of measurement. It is generally assumed that capital is very tricky to measure, but that labor is very easy. Labor is easy to measure because we usually count people (as if they were all identical), or, in more sophisticated versions, we compute a weighted sum of people where the weights are hours worked. The analogy with capital is straightforward. We should just count machines. Who can say that machines are more different than people? On the other hand, anyone who has followed the lead of Hollis Chenery [5], and attempted to obtain a better understanding of production functions by direct studies of technology, has found that in many interesting nontrivial processes the problem of obtaining direct physical measures of capital is relatively easy. Indeed, at this level one is able to get much better parametric measures of capital heterogeneity than of labor. But such detailed studies, though they have the very great advantage that one knows more precisely what one is doing, are not practically of much direct service in helping us to answer the great national welfare and productivity questions with which economists from A. Smith to A. Pigou have been concerned. In such matters the gulf between theory and empiricism is very wide because we do not have measures of capital in general and of labor in general that we can be sure are suitable for production functions in general.³

Apropos of some of the previous criticism, especially that of Anderson, the paper by Tibor Barna,⁴ "On Measuring Capital," is among the most valuable in this volume. Barna, thoroughly dissatisfied with our empirical knowledge of capital and our heavy dependence upon aggregate data derived from book values prepared in different ways by different firms, has undertaken direct sample surveys of British industry. These surveys provide fresh data on re-

³ In this volume there arises the question of how to measure the real value of new versus old capital. This is important for some purposes but is irrelevant for production function purposes at the process level where the proper physical measure of capital, such as pipe size, does not change with either age or value. The value may fall because in due time it is sure to leak, be subject to obsolescence, or require greater upkeep, but how much is "there" to facilitate the production of output, via a production function, does not change. I think the question is also irrelevant for aggregate production functions; for macroeconomic models are fundamentally one- or two-sector homogeneous output models, and do not really involve aggregate heterogeneous stocks of capital and labor unless we try to jam national income accounting data into them. This, by the way, seems consistent with Samuelson's view ([14] p. 332) that it is not clear that one knows what he is doing when fitting a Cobb-Douglas function for the whole economy. I think macroeconomic models are immensely valuable tools for deepening our understanding of the economic process, but I am not optimistic about the prospect of implementing them with the empirical data generally available.

⁴ See also the earlier paper by Barna [3].

placement cost, asset mortality, and depreciation. The great contribution is that these data were collected with some of the specific needs of capital theory in mind and with analytical understanding of the concepts lying behind the data.

Concerning the measurement of replacement cost, Barna's objective is to obtain an evaluation of assets that will measure the contribution that capital makes to production. He then states that the obvious answer to the search for realistic valuation is market price, but that for most fixed assets there are no quotations. For purposes of measuring the contribution that capital makes to production, I disagree that market price is appropriate. Indeed, replacement theory [16, pp. 3-4, 9] tells us that a firm should hold an asset as long as the asset's contribution to net worth *exceeds* its market value. Hence, in theory, the fact that a firm has not yet disposed of an asset is *prima facie* evidence that the asset contributes more to production than is measured by market price.

This is a subtle point in capital theory that is easily missed. We are accustomed, in measuring flow variables, to assume with theoretical justification that private and social values converge instantaneously in the market since each participant is presumed to adjust his purchases and sales of commodities until their marginal private valuations no longer exceed their external market values. However, with capital assets, in respect to the timing or economic-life decision (as distinct from the breadth decision), "adjustment" cannot occur instantaneously. It can only occur by "waiting," and as long as a firm is "waiting," i.e., holding an asset, it means that the private valuation exceeds the market valuation. This, by the way, explains why quotations are frequently not available for used assets. Where transaction (moving, etc.) costs are high, or where the asset has only one fairly homogeneous use so that all firms place a similar internal valuation on it, there will be no second-hand market. Each firm will hold the asset until it is junked.

This point, important as it might be in interpreting the Barna data, in no way reflects on the validity of the data. Quite the opposite, perhaps, for Barna measures replacement cost by fire insurance valuation, which, it seems to me, might actually come closer to measuring the private worth of assets than market price. The fire insurance valuation tends to exceed market value because, so the theorist might argue, the firm buying insurance must carefully assess the internal contribution that the insured asset makes to net worth.

Using these sample data on replacement cost valuation, Barna finds a good linear relationship between value added per employee per year and assets per employee. The intercept of this line is annual employee wages (£458), and its slope is the rate of return on capital (19 per cent). He argues that a linear relation is implied by competitive price theory which asserts that there should exist a tendency toward wage equality for the same type of labor in different industries, and for equality of the rate of return on capital. An adjustment for variation in wages with capital intensity, due perhaps to the higher skills required with a higher level of capital, gives an alternative rate of return of 16 per cent. Though the appended discussion of Barna's paper exhibits differences of opinion on the theoretical interpretation of these results [14, pp. 330-

33], there is no question that the paper is an important contribution to analytical empiricism.

A noteworthy aspect of Barna's data on mortality of assets is the finding that the mortality rate is a constant independent of age (a linear survival curve) for the age period covered (assets up to 40 years old). As to depreciation, Barna finds "surprisingly" high second-hand values, with assets being maintained in very good condition until the scrap decision is made. He finds quite often that the efficiency of plant increases, rather than decreases, with life. These results are entirely consistent with those of direct studies of engineering production functions.

The Hoffman paper, "Long-Term Growth and Capital Formation in Germany," provides a great deal of previously unpublished information. The data are time series of aggregate national income and capital stock in Germany from 1851 to the 1950's. The resulting aggregate capital (capacity) coefficient is remarkably stable over this century at 4.8:1.

Part IV of the book provides three excellent contributions to macro-economic models of growth by Kaldor, Champernowne, and Solow. These are technical papers, not suitable for leisurely general reading, though all three authors have written with pedagogical clarity. These papers are really part of an extensive series of contributions to the mathematical theory of capital and growth by Tobin [19], Solow [17] [2, pp. 89-107],⁵ Swan [18], Champernowne [4], Kaldor [10], Uzawa [20], Kurz [12], and many others.

Kaldor's paper consists of a discussion of several models, beginning with a simple classical model of growth and ending with a model of income distribution and growth. In the last model, Kaldor is concerned that it be consistent with certain approximate (or "stylized") facts such as the continued observed increase in capital per worker, a steady (as opposed to a declining) rate of profit (return, interest) on capital, the relative constancy of the capital-output ratio over long periods of time,⁶ and so on.

Solow's paper provides an elegant extension of the Åkerman-Wicksell model of capital to the problem of distributive shares under stationary conditions; then under conditions of balanced ("golden age") growth with labor growth the exogenous motive force; and finally, growth with neutral technological change. Under stationary conditions, the relative shares of profits and wages in the national income depend only on the technical parameters of the production functions in the consumer goods and producer goods sectors. Under balanced growth, the relative shares depend upon the technological constants,

⁵Two of the path-breaking papers were those by Tobin [19] and Solow [17]. Solow's Stanford paper [2, pp. 89-107] distinguishes capital goods of different vintages, and technological change occurs by embodying the latest improvements in knowledge in the new capital being constructed. This extension was an outgrowth of Solow's Corfu Conference model, as reported in the discussion [14, p. 384], and removed some artificial peculiarities from the results of the earlier model. The Stanford paper and many growth papers since have employed the analytically convenient idea of radioactive decay of capital—an assumption appearing in the Samuelson and Solow papers at the Corfu Conference.

⁶The U.S. capital-output ratio is really not very constant; see e.g. Anderson [1] and the recent paper by Klein and Kosobud [11]. Klein and Kosobud find a statistically significant long-term downward trend, 1900-1953, in the capital-output ratio of $\frac{1}{3}$ of one per cent semi-annually.

the rate of population growth and the durability of machines. An increase in durability increases the fraction of net income going to profits. Furthermore, for small increases from zero in the rate of growth, the share of profits in the national income is increased. The role of the savings function in this model is sharply illuminated. If the Marx-von Neumann assumption is made that all profits are saved and all wages are consumed, the interest rate coincides with the growth rate. On the assumption of different propensities to save out of wage and profit income, it is shown that the interest rate exceeds, equals, or falls short of the growth rate as capitalists' consumption exceeds, equals, or falls short of workers' savings. Under neutral technical progress, the income shares depend on the savings ratios and the rate of technical change, and the analysis is more complicated. In the discussion of Solow's paper, Champenowne shows that the results can be extended to the case in which the production functions for consumption goods and machines are not required to be of the Cobb-Douglas form, but are of general form apart from being homogeneous of degree one.

Two papers by A. Barrère and B. Thalberg deal with microeconomic capital theory. A major point of the Barrère paper is that capital and labor are technical complements rather than substitutes at the margin, and that the problem of the entrepreneur is to choose among alternative processes with differing capital-labor combinations. But this is precisely the programming, process analysis, approach which is not inconsistent with marginal productivity. If anything, it deepens that theory by introducing distinct processes whose range of choice provides a mechanism of neoclassical substitution between capital and labor. The programming approach, however, has largely dealt with short-run decision problems and only comparatively recently has the technique been brought to bear on long-run investment decision-making.

The Thalberg paper is concerned with the Keynes-Lerner-Haavelmo problem, to wit, if marginal productivity theory determines the demand for capital as a stock, what determines the demand for capital as an investment flow? In growth models, the phenomenon of investment demand, as a flow, is derived ultimately from some forcing function such as exponential growth in labor supply, which in turn causes the parameters of the capital-stock demand function to change over time, and *pari passu* the stock of capital to have a time derivative. Keynes argued, as is well known, that investment was determined by the condition that the marginal efficiency of investment equal the interest rate. The marginal efficiency of investment as a function of investment declines below the marginal product of the existing stock because, in part, as the investment rate increases, the pressure on the capital goods industries causes their marginal production costs to rise, thereby decreasing the return on capital. Lerner [13] elaborated on this point in his perceptive way but the issue has gained little attention until quite recently. Haavelmo [6] has now devoted a considerable part of a book to the problem and it is an important issue in Kaldor's final model in the paper discussed above.⁷

⁷ Uzawa [21] has suggested an ingenious mathematical formulation of these Keynesian concepts by introducing an explicit behavior function relating prospective returns in future years to current returns, the capital-output ratio and investment per head. These future returns are then discounted to the present to obtain the demand price of newly

Thalberg provides two models explaining the time rate of investment. In the first model, the rate of investment is explained by a behavior equation for the producers of machines which states that the rate of production of new machines is a linear function of the ratio of the price of capital goods to the wage rate. In this model, a decline in the rate of interest raises the price of capital and stimulates the output of capital goods; investment is partly a supply response phenomenon and partly the result of marginal productivity considerations. In the second model, capital goods command different prices, depending upon their delivery date. The existence of a market rate of interest means that buyers are willing to pay more for a capital good which calls for a short delivery lag. Producers, on the other hand, find it more costly to build capital goods under a short delivery contract. The resulting market for capital goods determines the number of new machines that will be built, their price, and their delivery date, as functions of the rate of interest and other parameters. Thalberg then demonstrates that a reduction in the rate of interest will, on balance, increase the number of new machines constructed.

The last paper, by J. Marchal, "Categories of Capitalists in the Theory of the Distribution of the National Income," is critical of the marginal productivity theory of distribution and expresses a preference for a theory in terms of struggles between economic groups. Such a theory, however, is not developed. The emphasis is on a discussion of the categories of income recipients that would be relevant to such a theory.

In summary, I consider this collection to be a valuable addition to the recent advances in capital theory. If some of the remarks in this review have been critical, this has been with the hope of enhancing, not detracting from, its value.

REFERENCES

1. P. S. ANDERSON, "The Apparent Decline in Capital-Output Ratios," *Quart. Jour. Econ.*, Nov. 1961, 75, 615-34.
2. K. ARROW, S. KARLIN, AND P. SUPPES, *Mathematical Methods in the Social Sciences*, 1959, Proceedings of the First Stanford Symposium. Stanford 1960.
3. T. BARNA, "The Replacement Cost of Fixed Assets in British Manufacturing Industry in 1955," *Jour. Royal Stat. Soc., Ser. A. (General)*, 1957, 120, 1-46.
4. D. CHAMPERNOWNE, "Capital Accumulation and the Maintenance of Full Employment," *Econ. Jour.*, June 1958, 68, 211-44.
5. H. CHENERY, "Engineering Production Functions," *Quart. Jour. Econ.*, Nov. 1949, 63, 507-31.
6. T. HAAVELMO, *A Study in the Theory of Investment*. Chicago 1960.
7. J. R. HICKS, "Valuation of the Social Income," *Economica*, May 1940, N.S. 7, 105-24.

produced capital goods, which, in equilibrium, must equal the supply price of such goods. This formulation opens the gate for mathematical analysis of Keynesian short-period equilibrium as well as long-run growth.

8. ———, "The Measurement of Real Income," *Oxford Econ. Papers*, June 1958, N.S. 10, 125-62.
9. J. HIRSHLEIFER, "On the Theory of Optimal Investment Decision," *Jour. Pol. Econ.*, Aug. 1956, 66, 329-52.
10. N. KALDOR, "A Model of Economic Growth," *Econ. Jour.*, Dec. 1957, 67, 591-624.
11. L. R. KLEIN AND R. KOSOBUD, "Some Econometrics of Growth: Great Ratios of Economics," *Quart. Jour. Econ.*, May 1961, 75, 173-98.
12. M. KURZ, "Patterns of Growth and Valuation in a Two-Sector Model," *Yale Econ. Essays*, forthcoming.
13. A. P. LERNER, *Economics of Control*. New York 1946.
14. F. A. LUTZ (Chairman of Programme Committee), AND D. C. HAGUE (Editor), *The Theory of Capital*. New York 1961.
15. P. A. SAMUELSON, "Evaluation of Real National Income," *Oxford Econ. Papers*, Jan. 1950, N.S. 2, 1-29.
16. V. L. SMITH, "Depreciation and Investment Theory," ONR Tech. Rept. No. 105, Institute for Mathematical Studies in the Social Sciences, Stanford University, Dec. 1961.
17. R. M. SOLOW, "A Contribution to the Theory of Economic Growth," *Quart. Jour. Econ.*, Feb. 1956, 70, 65-94.
18. T. SWAN, "Economic Growth and Capital Accumulation," *Econ. Record*, Nov. 1956, 32, 337-61.
19. J. TOBIN, "A Dynamic Aggregative Model," *Jour. Pol. Econ.*, Apr. 1955, 63, 103-15.
20. H. UZAWA, "On a Two-Sector Model of Economic Growth," *Rev. Econ. Stud.*, Oct. 1961 29, 40-47.
21. ———, "Toward A Keynesian Model of Economic Growth," Center for Advanced Study in the Behavioral Sciences, multilithed. Stanford 1962.

COMMUNICATIONS

Economic Forecasting When the Subject of the Forecast Is Influenced by the Forecast¹

Economists' forecasts influence business behaviour and, therefore, the values of the variables being forecast. Forecasts of national income, for example, influence private investment outlays which, in turn, help to determine the level of national income. It is sometimes suggested that economists' forecasts are "self validating," implying that a forecast will be more nearly correct if it is made public than if it is kept a dark secret. Almost at the other extreme, there is the view that publicly announced forecasts must inevitably be invalidated by the response of the business world to the forecast. On a slightly different plane, it is sometimes argued that the instability of the economy can be traced, at least in part, to faulty forecasting and would be reduced by an improvement in the quality of forecasts.

This paper will examine the validity of these three points. It will be shown that when the variable to be forecast is itself influenced by the forecast (a) the announcement of a forecast does not necessarily validate, or tend to validate, the forecast, (b) accurate forecasting may be impossible, (c) even perfectly accurate forecasting, if it were possible, may add to the instability of the economy. The model that I shall work with is of the simplest multiplier-accelerator type and, no doubt, is grossly unrealistic. But that matters little since, for the most part, I am concerned only to produce valid counter-examples to certain generalizations.

I. Are Official Forecasts Always Self-Validating?

Suppose that at the end of each period of time the Central Bank forecasts the net national income of the following period. (The income of period t is denoted by y_t , the Bank's forecast of y_t by y_t^* .) If the forecast is announced, it is adopted without question by the business community. If it is not announced, businessmen must rely on their own guesses about the future level of income; I suppose that they adopt the simple forecasting principle that next period's income will be equal to the current period's.²

Now net national income during period t is the sum of consumption spending, c_t , and net investment spending, i_t . Consumption spending, it is supposed, depends linearly on the income of the preceding period, and investment spending depends linearly on the difference between the income of the preceding period and the income forecast during that period for the current

¹ I am indebted to C. S. Soper, a colleague at the University of New South Wales, for helpful comment on an earlier draft.

² Nothing of importance in this or the following section depends on this special assumption.

period. Thus, if the Bank's forecast is announced,

$$\begin{aligned}
 (1) \quad y_t &= c_t + i_t \\
 &= \alpha + \beta y_{t-1} + \delta(y_t^* - y_{t-1}) \quad 0 < \beta < 1 \\
 &\quad \alpha, \beta > 0
 \end{aligned}$$

where β is the marginal propensity to consume and δ is a version of the accelerator. If, on the other hand, the forecast is kept secret,

$$\begin{aligned}
 (2) \quad y_t &= c_t \\
 &= \alpha + \beta y_{t-1}
 \end{aligned}$$

In the former case the forecasting error is:

$$\begin{aligned}
 (3) \quad \epsilon_t &= y_t^* - y_t \\
 &= (1 - \delta)y_t^* + (\delta - \beta)y_{t-1} - \alpha;
 \end{aligned}$$

in the latter case it is:

$$\begin{aligned}
 (4) \quad \epsilon_t' &= y_t^* - y_t \\
 &= y_t^* - \alpha - \beta y_{t-1}
 \end{aligned}$$

It is convenient to adopt the expression:

$$(5) \quad v_t = \frac{|\epsilon_t'|}{|\epsilon_t|} - 1$$

as a measure of the self-validating power of publicly announced forecasts. If v_t is positive, announced forecasts are self-validating; if v_t is negative, they are self-destructive; and if v_t is equal to zero, the announcement of the forecast will have no effect on the forecasting error (though it will, of course, affect y_t). That in the context of models (1) and (2) v_t may be of either sign is easily checked. Thus suppose that both ϵ_t and ϵ_t' are positive. Then v_t reduces to:

$$v_t = \frac{\delta}{\epsilon_t} (y_t^* - y_{t-1})$$

and announced forecasts are seen to be self-validating only if *increases* in income are forecast; if decreases are forecast, the forecasts are self-destructive.

It is a simple matter to show that in other cases (ϵ_t and ϵ_t' both negative, ϵ_t and ϵ_t' of opposite sign) v_t is subject to a similar ambiguity as to sign. That clinches proposition (a).

In the foregoing discussion attention has been focussed on specific or "point" forecasts. It is worth noting, perhaps, that if the Bank were content to forecast merely the *direction of change* of income the forecasts could not

possibly be self-destructive. Suppose, for example, that the Bank were to forecast an increase in national income. If the forecast were kept secret, (2) would hold and

$$(6) \quad y_t > y_{t-1} \text{ if and only if } y_{t-1} < \frac{\alpha}{1 - \beta}$$

If, however, the forecast were made public, some investment spending would take place and

$$(7) \quad y_t > y_{t-1} \text{ if and only if } y_{t-1} < \frac{\alpha + i}{1 - \beta} \quad (i > 0)$$

The forecast could still be wrong, even if publicly announced. But its publication could not convert an increase in income into a decrease; and it might turn a decrease into an increase. In *that* (new) sense, the forecast *must* be self-validating. Similarly for a forecast decline in income: the publication of the forecast could not convert a decrease in income into an increase; but it might convert an increase into a decrease.

II. *Is a Perfectly Accurate Announced Forecast Possible?*³

If, for whatever reason, income during period $(t-1)$ stands at the "Keynesian intersection," that is, if

$$y_{t-1} = \frac{\alpha}{1 - \beta},$$

then, whether or not the forecast is announced, any forecast of no change will be perfectly accurate. In what follows we put aside this singular case.

Suppose, then, that the forecast is "right on the nose," with $y_t^* = y_t$. From (1),

$$(8) \quad (1 - \delta)y_t = (1 - \delta)y_t^* = \alpha + (\beta - \delta)y_{t-1}$$

Thus it appears that a perfectly accurate announced forecast is possible if and only if

$$(9) \quad \delta \neq 1$$

$$\frac{\alpha}{1 - \delta} + \frac{\beta - \delta}{1 - \delta} y_{t-1} \geq 0$$

In particular, accuracy is impossible if $\delta = 1$. Suppose, for example, that $\delta = 1$ and that

$$y_{t-1} = c_{t-1} > \frac{\alpha}{1 - \beta}$$

Then an announced forecast of no change in income will result in a fall in

³ This problem has been treated extensively by Grunberg and Modigliani [1].

consumption, and therefore income, to

$$y_t = \alpha + \beta y_{t-1} < y_{t-1},$$

and the forecast will prove to overstate income by

$$\epsilon_t = (1 - \beta)y_{t-1} - \alpha > 0$$

Nor will matters improve if an increase or decrease in income is forecast. In each case net investment spending will change by precisely the amount of the forecast change in income, leaving the error of forecast unchanged. The Bank is in a dilemma from which there is no escape: however cautious or however extravagant its forecast, it will always be proved overoptimistic, and always in the same degree.

If, on the other hand, income were less than the Keynesian equilibrium value, that is, if

$$y_{t-1} = c_{t-1} < \frac{\alpha}{1 - \beta},$$

the Bank would find itself in a similar dilemma: whatever its forecast, the forecast would prove to be overpessimistic, and always in the same degree.

But, as (9) makes clear, $\delta \neq 1$ is merely a *necessary* condition of accurate announced forecasting. Accuracy may remain beyond reach even when $\delta \neq 1$. If, for example,

$$\beta < \delta < 1$$

$$y_{t-1} > \frac{\alpha}{\delta - \beta}$$

the only accurate forecast would be of negative income. So much for (b).

III. *Does the Announcement of Accurate Forecasts Contribute to Stability?*⁴

Suppose that condition (9) were satisfied and that the Bank's forecasts were perfectly accurate. Then:

$$(10) \quad y_t = \frac{\alpha}{1 - \delta} + \frac{\beta - \delta}{1 - \delta} y_{t-1},$$

with stability condition

$$(11) \quad \left| \frac{\beta - \delta}{1 - \delta} \right| < 1$$

If, however, the forecast had been kept secret we should revert to (2), with stability condition

$$(12) \quad |\beta| < 1$$

⁴ Cf. Devletoglou [2, p. 154].

Thus while the announcement of accurate forecasts might stabilize an otherwise unstable economy ($\delta > \beta > 1$), or render an already stable economy "more stable" ($\delta < \beta < 1$), these are by no means the only possibilities. If, for example, $\beta < \delta < 1$, the announcement of accurate forecasts would convert an otherwise stable economy into a violently unstable one, with jagged, period-by-period oscillations of increasing amplitude.⁵

Of even greater theoretical interest is the possibility that the mere announcement of accurate forecasts might displace the economy from an ultimately stationary path to one of ultimately exponential growth. (Consider the case $\delta > 1 > \beta$.) This is heady stuff, to be imbibed with caution. I merely note the possibility.⁶

IV. *Announced Forecasts as Instruments of Control*

Attention has been focussed on the possibility and implications of perfectly accurate forecasting. But from the viewpoint of economic control this emphasis is misplaced. The Central Bank, as custodian of stability and growth, is not directly interested in accuracy at all. From its point of view, announced forecasts are merely means to ends, and the most efficacious forecasts may be wildly and deliberately inaccurate. This evidently raises ethical issues similar to those involved in the suppression of unfavorable war news or of unpromising medical diagnoses. It also poses a technical dilemma: to achieve economic objectives it may be necessary to repeatedly hoodwink the public; but the possibility of hoodwinking derives from gullibility, and even the most gullible will not be deceived indefinitely by the same confidence trick. In other words, the more vigorously the control is exercised the more ineffective it becomes.

MURRAY C. KEMP

REFERENCES

1. EMILE GRUNBERG AND FRANCO MODIGLIANI, "The Predictability of Social Events," *Jour. Pol. Econ.*, Dec. 1954, 62, 465-78.
2. E. A. DEVLETOGLOU, "Correct Public Prediction and the Stability of Equilibrium," *Jour. Pol. Econ.*, Apr. 1961, 69, 142-61.

The Revised Index of Industrial Production

A major revision of the Federal Reserve Board index of industrial production was put into effect in 1959. Important changes were: (1) addition of electric and gas utilities and fluid-milk processing to the index; (2) adjust-

⁵ One hesitates to draw welfare conclusions from an analysis as superficial as this, or even to criticize the view of others. It does seem, however, that the view expressed by Grunberg and Modigliani, that the substitution of correct for incorrect expectations will always bring about an improvement in the allocation of resources, stands in need of some qualification. (See Grunberg and Modigliani [1], p. 476.)

⁶ The converse is also possible: the announcement of accurate forecasts may displace the economy from a path of exponential growth to an ultimately stationary path. Consider the case $\beta > \delta > \frac{1}{2}(\beta + 1) > 1$.

ment to 1957 value-added weights for the index, covering the period since January 1953; and shift to a 1957 index base, while continuing the old 1947-49 base for summary groups; (3) adjustment of indexes to benchmarks indicated by the 1954 Census of Manufacturers: adoption of new annual indexes for 32 series, and annual correction factors for 3 series. Other changes of general interest include a new presentation by market groupings, and improved seasonal adjustment factors.

All of these revisions are good in principle, and some, notably the market-grouping presentation, may prove of considerable analytic value. However, there are questions concerning the way in which these changes were carried out, and as to the over-all accuracy of the revised index.

The new index, since the start of 1951, has increased more rapidly than the old. By mid-1959, when the substitution was made, the new index was 8 per cent higher than the old, representing an average spread of about 1 per cent per year. It is the contention of this paper that the new index has an upward bias, which may account for all or most of the difference from the old index, and which continues to operate at an annual rate which may be as high as 1 per cent per year.

Particular criticisms, which in most cases contribute to this general conclusion, concern:

1. Use of four separate series for electric power, with a much higher weight for the rapidly growing residential power series, instead of a single series, and the exclusion of electric power produced by industrial corporations. Use of a similar method for gas.

2. Weighting of electric power and gas to include extensive distribution activities. Weighting of important manufacturing series to include extensive and relatively increasing distribution and advertising activities, notably fluid milk, drugs, bakery products, cigarettes.

3. Excessive use of deflated-value series instead of physical production series, and the application of inadequate price deflators to them.

4. Use of exaggerated quality corrections for automobiles and possibly for other series.

These criticisms apply particularly to the annual series, which govern the trend of the index, and not necessarily to the monthly series .

I. Electric Power Index

The new electric power index was first prepared in 1956, and combined into the over-all industrial production index in the latest revision. By 1960 this electric power index reached 319.9 per cent of the 1947 level,¹ while actual electric power output, as measured in kilowatt hours, reached only 273.4 per cent of the 1947 level. Certainly this latter substantial increase should be included in the index of industrial production. What is at issue is the inclusion of the considerably faster increase shown by the FRB electric power index.

¹ Here as elsewhere, FRB index numbers are taken or computed from indexes contained in [8] and current industrial production releases of the Federal Reserve Board.

Almost half the divergence is due to the omission of direct production of electricity by industrial establishments. During the postwar period, industries have obtained a more than proportional part of their increased power needs from public utilities. Industrial establishments generated 16.8 per cent of the country's total power output in 1947, but only 10.4 per cent in 1960. Obviously, this omission significantly raises the trend of the index. The basis for this omission is the view of the Federal Reserve Board that indexes should be compiled on an industry rather than on a product basis. That is, its preference is to include all of the variety of products made by the establishments of a given industry in one index, instead of grouping all output of a given product, no matter where it is made. For example, an index of production for the steel industry, covering all its products, may have a different trend from an index of output of the product steel, no matter where made. But the over-all index of industrial production, embracing the totality of industrial commodities, should be the same whether added up according to products or according to industries.²

Referring to the industry index approach, Clayton Gehman of the Federal Reserve Board explained in a communication [3] to the author:

Power production by industrial users is not directly represented by any monthly or annual series. It is, however, indirectly represented by the series used, which generally pertain to the primary activities of the industries in question. To provide direct representation would require that the power generated be spread among all the industries which generate their own power. This would be a troublesome adjustment, although in principle perhaps a desirable one.

But actually, there is no requirement to spread the industrial power production among the producing sectors. In practice, the revised FRB index is consistently on an industry basis only in the calculation of value-added weights. It is really a mixture of industry and product series. In all sectors where direct production data are used as a measure of output change there is no adjustment in the index for fluctuations in output of items not normally made by the responsible industry, nor in output of the measured item by outside industries. Production of steel by Ford and International Harvester is not separated out and credited to the automobile and farm equipment industries respectively. The FRB does not segregate and distribute among users captive production of iron and steel castings, which account for 40 per cent of the total, or captive coal output, also very important.

It would appear more consistent with the procedure for other easily measurable commodities to include all electric power on a product basis. The overriding point is that electric power output by an industrial plant is just as much a part of over-all industrial production as electric power output by a public utility. It should be included in the total production index, no matter where it is classified, and even if it does not appear in any industry index.

The indirect representation claimed is of dubious significance. Practically,

² For a full discussion of the two methods see [15, pp. 14-17].

it refers merely to inclusion of captive electric power in the value-added weight base of an industry. This is *not* equivalent to including the trend in captive power output, except in the unlikely event that both the proportion of captive power in total power use and the consumption of power per unit of final output remain constant. Since actually the proportion of captive power in industrial use has been declining, inclusion of an assumed constant proportion by representation in the indexes of consuming industries carries forward the upward bias in the index. Anyhow, the value-added weighting mechanism is not sufficiently refined for this type of representation to be really effective. At best it is a poor substitute for direct inclusion of all power output.

The differential weighting of a kilowatt hour of utility power output is as follows (taking the weight of a kilowatt hour of power sold to industrial users as 100): residential, 225; commercial, 210; industrial, 100; Atomic Energy Commission, 30.³ Between 1947 and 1960 the heavily weighted residential power consumption increased more than four times, while lightly weighted industrial use increased only two and one-third times. The very lightly weighted use by the AEC increased 33 times during the 13-year interval, but this offset less than half the bias resulting from overweighting of residential use, owing to the small initial quantity involved. Moreover, since 1955, AEC use has risen less rapidly than total power use, so its light weighting has reinforced the upward bias deriving from the heavy residential weighting.

Combining the effects of omission of production by industrial establishments and of unequal weighting, starting with 1947, we find that the excess of the FRB index over the actual trend of power output reached 6.6 per cent in 1950, 10.1 per cent in 1953, 11.2 per cent in 1957, and 17 per cent in 1960. The varied pace of increase in the bias reflects mainly changes in the trend and importance of AEC power use.

The FRB differential electric power weights are computed from differential revenues received, assumed to be proportional to differences in value added per kilowatt hour. The purpose is to include distribution as well as production activity by utilities [10]. At the point of production, each kilowatt hour of power is equal, regardless of its destined use. But there are great differences in distribution cost as between various markets, possibly reinforced by inverse differences in bargaining power amongst these markets. Gehman makes the case for this method:

The basis for assigning more weight to a kilowatt-hour used in residence than to a kilowatt-hour used in a factory is that the former, on the average, carried more distribution and service activity with it than the latter. This is not a very convincing basis if production is thought of as purely commodity-producing activity; but it does make sense if the industrial production index is thought of as measuring the contribution to the nation's total output of goods and services made by establishments classified in the industrial sectors of the economy. The critical

³ Computed from production data of the Federal Power Commission and weights contained in [8, p. S-18].

distinction is between a measure covering certain activities and a measure covering certain establishments. [3]

Following this argument to its logical conclusion, we would have to exclude from industrial production the output of factories owned by Sears Roebuck, a distributing company, and include the retail activities of outlets directly owned by gasoline refining companies, with sharp jumps and drops in the index resulting from changes in ownership. We would include the financial activities of auto company credit subsidiaries, exclude the oil production in Southern Pacific wells, but include rail and ship transportation of steel company subsidiaries. We would end up with a hodge-podge, and not an industrial production index.

It may be argued that these examples are extreme because Gehman refers to "establishments," not financial units. However the distribution and service activities of the power companies are mainly based not on the power stations, but on the offices of the companies, which are widely separated from the power plants and in the field. The FRB is not using "establishment" in the narrow Census sense, but in a much broader sense which includes varied operations at different locations.

An index of industrial production *is* a measure of "purely commodity-producing activity," as Gehman puts it. The United Nations publication setting international standards for such indexes states this quite definitely:

It is concluded that the title "index number of industrial production" can be retained as the description of an index which combines series representing changes in the volume of work done in various sectors of industry, limited to the production of commodities, excluding agriculture and services [13, p. 7].

The present index of electric power output should be replaced by one measuring completely and uniformly the output of electricity by all producers, industrial and utility. The market-grouping indexes should be retained for purpose of analysis, but weighted in proportion to kilowatt hours in the base year. Similar considerations apply to gas.

II. *Overweighting Certain Industries*

The overweighting of residential and small commercial power, by inclusion of distribution and service charges in the weight base, also occurs in the weighting of electric power as a whole, increased by the inclusion of general advertising and distribution expenses. Thus the total electric power index, besides having an upward bias, is overweighted as a component of the total industrial production index. Since electric power production rises more swiftly than industrial production as a whole, this is an added source of upward bias.

Residential electricity and gas account for 7.26 per cent of the total weight for consumers' goods in the FRB index, as compared with 3.39 per cent of consumers' expenditures for commodities, as reported by the Commerce Department. On the other hand, fuel oil and gasoline account for only 3.82 per cent of the consumers' goods segment of the FRB index, but are 7.58 per cent of all consumers' commodity outlays.⁴

⁴ Adjusted to include residential gas and electricity in commodity outlays, instead of

The index weight of residential utilities, relative to consumer outlays, is about four times as great as that for consumers' fuel oil and gasoline. A major part of this discrepancy is due to the fact that distribution and service costs and charges, which are important in both cases, are included in the index weight base for the utilities but excluded from that for fuel oil and gasoline. In recent years output of the latter commodities has increased but slowly, in sharp contrast to the former. Thus the relatively high weight for consumer utilities, and the relatively low weight for consumer fuel, combine to give a sizeable upward bias to the index as a whole.

Similar discrepancies apply to the weighting of a number of manufacturing industries. The point can be brought out by comparing FRB value-added weights with production-worker man-hours in 1957. For manufacturing as a whole the FRB allots .3430 points of weight per 100,000 man-hours. For cigarettes the ratio is .9819, for cigars .1979.⁵ Cigarette manufacturing has been rising steadily, while cigar production has been relatively stagnant. So the overweighting of cigarettes unduly raises the trend of the tobacco products group as a whole.

In general, use of value-added weights is superior to use of man-hour weights because of differences in wage-levels, reflecting different average skills, and differences in the value of fixed capital invested per man-hour, both of which are mirrored more or less appropriately in value added. However, the five-to-one difference between cigarettes and cigars is only attributable in minor part to such normal factors. It results mainly from large-scale advertising and other nonmanufacturing items included in value added for the cigarette industry. Cigarette companies spend on advertising alone one and one-half times as much as they do on wages and salaries. And these outlays are then marked up by unusually favorable profit margins made possible by the small numbers of producers, the steady demand, and the historical success of resale price maintenance.

Similarly, the weight for fluid milk per 100,000 man-hours is .5789, of ice cream .5449, and of other dairy products (butter, cheese, condensed and dried milk) .2275. Extensive distribution activities by dairy companies account for the relatively high value-added to man-hours ratio in the first two industries. The fluid milk industry pays more in salaries to delivery-salesmen than to production workers. Here also the higher-weighted products have a steeper upward trend than the others.

The chemicals group has .6554 points of weight per 100,000 man-hours. This reflects, largely, the high wage rates, research expenditures, and capitalization of many chemical industries. But the very highest ratios are for drugs and soap, 1.0162 and 1.1219 respectively. These are low-capital industries; but they do have enormous advertising and promotional expenditures, which account for the exceptionally high value-added to man-hours ratios. The index for drugs, soap, and toiletries, with such a high relative weight, rises much more rapidly than the over-all industrial production index, and

services, where they are placed in the existing GNP classification. Consumers expenditures percentages for 1957 computed from [12, Table 15, p. 14].

⁵ These and subsequent similar calculations were made from data contained in [14, Table 1], and [8].

somewhat more rapidly than the major chemical, petroleum, and rubber products group of which it is part.

Soft drinks is another rapidly rising industry with its weight inflated by distribution activities. However, to a lesser extent the same is true for the slowly rising bakery products industry, and the comparatively stagnant beer and ale industry.

Despite these exceptions, a high weight, based on inclusion of distributive-promotional activities, is generally given to the more rapidly growing industries. This is to be expected, for rising market prospects stimulate advertising, promotion, and direct distribution activities, and the realization of these prospects provides the manufacturer with the financial means for carrying on these activities on an expanding scale.

The FRB statisticians estimated for broad groups the change in weights that would result from exclusion of advertising and other business services. They concluded that the changes would not be sufficient to justify the effort [8]. However, the corrections should be made for individual industries, and should be designed to exclude *all* distributive and service activities, notably direct retailing by manufacturers, and the mark-ups on cost of these activities, from value added as used for weighting purposes. The FRB and the UN agree on the desirability of such exclusion, the latter agency with considerable emphasis [8, p. 30] [13, p. 18]. Certainly estimates would be necessary, but their probable error would be less than the certain error now existing from failure to make the correction. The result of the correction would be a more accurate, and more slowly rising, over-all index.

III. *Excessive Use of Deflated Value Estimates*

The FRB index was originally constructed exclusively from quantity series. Later, to increase coverage, man-hour series, corrected for estimated productivity changes, were added. After the Second World War, annual adjustments were made to the latter series and to some incomplete production series by means of more accurate production data available only yearly. Being concerned with trends, we will limit attention here to the annual series. The 1953 revision, the first to apply the adjustments comprehensively, introduced the deflated value series as an annual adjustment mechanism. This is common enough in GNP analysis, but had not previously been considered suitable for construction of industrial production indexes. The use of deflated value series, and of combinations of value, quantity, and man-hours sources, has been so increased in the latest revision that industries with less than half the weight of the global index are governed by exclusively quantitative annual series. This is illustrated by Table 1.

The outstanding change is the rise in the importance of deflated value series from 9 per cent in the 1953 revision to 27-37 per cent in the 1959 revision. Moreover, in the case of durable goods, the most volatile and sensitive sector, deflated value series account for 20.26 points out of 49.66 points total, considerably in excess of the 13.52 points in quantity series, and probably accounting for over half the total group weight with proper distribution of combination sources.

The specific utility of an index of production depends upon its construction from physical quantities and not values. It is a measure of how much was produced, not how many dollars the product sold for. A price-index deflation may approximate the same result, but it is subject to a second order of error, and should be used only as a last resort. A direct quantity measurement, even one involving some estimation, is usually preferable.

TABLE 1—WEIGHTS OF SOURCES OF ANNUAL DATA: FRB INDUSTRIAL PRODUCTION INDEX 1953 AND 1959 REVISIONS

Source	Base Period Weights (per cent)		
	1953 Revision	1959 Revision	
		A	B
Physical Quantities	76	47	57
Manhours	4	3	6
Deflated Values	9	27	37
Other and Combinations	12	23	0
Total	100	100	100

1953 Revision from [9]. Physical quantities includes use of materials consumed, accounting for 12 weight points.

1959 Revision compiled from [8, pp. S-4-S-19]. In column A no attempt is made to distribute combination sources. In column B equal distribution among combination sources is assumed. E.g., 16.48 weight points are derived from quantity and value combinations. In column A, they are included under "other and combinations." In column B, 8.24 points each are attributed to physical quantity and deflated value sources.

This was clearly recognized by the FRB statisticians in compiling the 1953 revision:

. . . industry value figures, materials consumed, and man-hours—are inherently less reliable for production measurement, even after adjustments for price changes and so forth, than well compiled data on physical output, which ordinarily are not tabulated by industry of origin. In developing the production index, quantity of output figures were usually selected in preference to the other types of data despite the fact that they did not correspond exactly to the industry concept desired, unless they also suffered from other deficiencies, such as inadequate coverage [9].

This comment applied specifically to annual series. Almost half the monthly series were based on man-hours, which was considered reasonable because they were adjusted annually by the more complete and accurate physical quantity data. Similarly, the UN statisticians regard quantity and deflated value series as equally good for short-period changes, but state that for linking benchmark intervals of five years—or preferably one year—use of deflated value series is not justifiable, and weighted quantity indexes should be used [13, pp. 25, 39 ff].

As indicated by this source, weighted value indexes are particularly un-

desirable when used for long-period indexes of production, such as those which are computed from major Censuses of Manufactures and serve as benchmarks for FRB index revisions.⁶ The 1947-54 Census indexes, for the first time, used a substantial number of deflated value series. This reduces the value of these indexes as benchmarks, or as verification for the validity of the 1959 revision, as cited by the FRB [8, p. 21]. The agencies involved should refrain from repeating this practice in future benchmark calculations.

In the 1939-47 Census calculation, the statisticians handled those industries lacking quantity data by assuming productivity changes parallel to those observed in industries within the same group for which quantities were available. This would be valid, as would also the alternative method of assuming parallel changes in value added per unit of output. While the latter method involves a price index of sorts, it is one wholly derived from the observed data, and is set up merely as a computing medium [15, pp. 11-14].

While deflated value series have a wider range of error than quantity series, they have no intrinsic bias. In two cases, checked by this writer, deflated value series used by the FRB corresponded reasonably well with benchmark calculations based on physical quantity data contained in the 1947, 1954, and 1958 Censuses of Manufactures. These were soap and related products, and bakery products. However, in other very important cases, the deflated value series have significant upward biases, stemming in part from the use by the FRB of specially constructed price indexes as deflators.

In the 1953 revision the FRB statisticians almost always identified their price deflators as BLS indexes. However, they give no identifications in the 1959 revision. They have constructed or used, special, unpublished indexes for major sectors where they regard the BLS indexes as biased upwards [8, p. 72] [2, p. 40]. These specially constructed FRB deflators, rising less than the BLS indexes, deflate value figures less, and result in faster rising production indexes. This is related particularly to quality changes, for which, in the FRB view, prior indexes make inadequate allowance. The FRB used special price indexes, or made other special adjustments, to correct for quality changes for electrical generating apparatus, locomotives, telephone equipment, automobiles, and other items [8, p. 72].

We agree that the allowance for quality changes is often difficult to measure, but is an important factor. In some cases it can be calculated more or less readily. For example, one can base an index on the capacity of steam-turbine generators, rather than on their number or weight. But not all quality changes represent measurable improvements. During the postwar period of rising prices, manufacturers have often made price increases indirectly, through the introduction of new models at higher prices. Such new models may or may not include a real improvement in quality, and rarely one proportional to the rise in price. Sometimes, especially in the case of consumers' goods, there is only a packaging shift. In some cases the new model is inferior in quality.

⁶ Computed originally by Solomon Fabricant and the Nation Bureau of Economic Research, they were jointly calculated for the 1939-47 Census interval by the Census Bureau and the Federal Reserve Board, and for the 1947-54 interval by these two agencies and the Bureau of Labor Statistics.

Moreover, existing BLS indexes appear generally to give full allowance for quality improvement. The Bureau's procedure of linking price quotations for identical specifications, and splicing on new and improved specifications at the old index level, automatically deflates for quality improvement. For example, the Bureau, in compiling its consumer price index, has "linked out" of the index for one low-price make of automobile in one city a total of \$669, or, in 1960 prices, \$832, mainly on account of quality changes, over the interval 1939-1959. Three-fourths of that downward adjustment occurred since 1954 [11].

If the BLS may fail to link out some quality improvement, it may also incorrectly link out price increases introduced in the form of new specifications not involving proportional quality improvement. Nor do its indexes catch cases of reduced durability of certain commodities.

The question of appropriate allowance for quality change in index number construction is a subject of controversy, especially in respect to BLS indexes. This writer agrees with Milton Gilbert's conclusion [4, p. 997]:

It will readily be seen that the flights of fancy which would correct for the imagined upward bias in the cost-of-living index, because of lack of correction for quality change, would give doubtful results when transferred to the production index. . . .

Apparently the FRB takes a different view. Objection here is raised to its use of unpublished and undocumented price indexes, contradicting established indexes, as major ingredients in the preparation of its production index.

Also, wherever price index adjustments can be made for quality factors, corresponding quantity adjustments can be made directly. The FRB shifted from a physical volume index for machine tools to a deflated value index. The quality factors used in composing its price deflator could be applied, with appropriate formal variations, to the previously used physical output series. This would avoid the independent error introduced through an intermediate price series. Moreover, the quality factors considered should be published in sufficient detail to permit independent verification and criticism.

The extremely important market category of business equipment accounts for 12.16 base-year points in the index. It is most dependent on deflated value measures, with 9.91 weight points calculated in this way, and only 1.70 points by simple quantity measures. The FRB compared Commerce Department constant-dollar producers' goods expenditures with the FRB index for this group for the period 1953-59. It found a marked divergence after mid-1957, with the FRB index ending up relatively higher by 10 per cent [8, p. 73]. The FRB attributes the discrepancy to an excessive rise in the Commerce price deflator. This appears unlikely, since the deflator increased only 5 per cent between 1957 and 1960, half the amount of the discrepancy. The FRB explanation implies a 5 per cent *decline* in average prices of equipment, while trade reports of the period conform generally to the modest rise in the Commerce deflator.

The divergence is even more striking if carried back to 1947, but its impact is mitigated by points of noncomparability in coverage between the Commerce producers' durables group and the FRB business equipment group. A more

TABLE 2—PRODUCERS' AND GOVERNMENT PURCHASES OF DURABLE EQUIPMENT,
IN CONSTANT DOLLARS, AND FRB INDEX OF PRODUCTION OF EQUIPMENT
AND EQUIPMENT MATERIALS SELECTED YEARS, 1947-1960

Year	Durable Equipment Purchases		FRB Production Index, Equipment and Equipment Materials Combined	
	1954 Dollars Billions	Index 1947 = 100	Index 1947 = 100	Percent of Durable Equipment Purchases Index
1947	25.3	100.0	100.0	100.0
1950	26.9	106.3	103.2	97.1
1953	44.3	175.1	185.5	105.9
1957	41.6	164.4	191.4	116.4
1960	37.6	148.6	195.8	131.8

Source note: Durable equipment purchases compiled from [16, Table VII-6, p. 224] and [12, Table 66, p. 31].

reliable comparison is obtained by relating the Commerce series, in constant prices, of private and government expenditures for durable goods to the FRB index for producers' equipment, defense equipment, and producers' equipment materials, combined with appropriate weights.⁷ This comparison is shown in Table 2.

Between 1947 and 1960 the FRB series rose almost twice as much as the Commerce series. The discrepancy builds up steadily after 1950, cumulating to 31.8 per cent by 1960. If interpreted as an upward bias in the FRB index, it contributes, by 1960, an upward bias of 7.54 per cent to the entire index, or over one-half of one per cent per year.

Sufficient quantitative data are available to provide a sound basis for a genuine production index for equipment. The Commerce Department, in its *Facts for Industry* series, publishes quantity data annually or more frequently for products which, with closely dependent items such as spare parts, account for more than half the value added in the manufacture of nonelectrical machinery. Besides taking steps to broaden that coverage, the gaps can be filled by use of man-hour statistics, corrected by productivity indexes inferred from related branches for which quantitative data are available.

Value deflation of the annual drugs and medicines index also has serious consequences. The index is not published regularly, presumably because of its unreliability. But it has a significant impact, because of its 1.16 points of weight, and its rapid rise. In a special listing of consumers' goods, the FRB showed drugs near the top, with an index of 323 for the first half of 1959,

⁷ The FRB defense equipment group is incomplete. A rising proportion of defense equipment is included in the FRB business equipment group, and some in business equipment materials. Hence the combination of government and privately purchased nonconsumers' durable items for both the Commerce and FRB series gives a better comparison. More precise comparability would be obtained by adding net exports and inventory accumulation of producers' and defense equipment to the Commerce figures. The trends have been such that this would enhance the contrast shown by Table 2.

on a first-half 1947 base [8, p. 10]. Commerce Department estimates at current prices show consumer spending for drugs and medicines in 1959 at 274 per cent of the 1947 level [16, Table II-4, p. 150] [12, Table 15, p. 14]. Since foreign trade and government purchases did not change so as to affect the comparison materially, these two indexes, if both are correct suggest a 15 per cent decline in the average price of drugs between 1947 and 1959. The BLS consumer price index shows a rise of 23 per cent, its wholesale price index a fall of 10 per cent. However, in this case, none of the standard price indexes can be taken seriously, and for that reason were ignored by the FRB in its 1953 revision [9, pp. 1272-73].

The BLS overcorrects for quality improvements, fails to measure price increases concealed through varied packaging, and overweights declines of new drugs from prices when they were in the experimental stage. Its method does not take into account the standard industry practice of introducing new forms of old drugs at higher prices, to cash in on novelty value, then letting the price taper as still different forms are introduced at still higher prices.⁸

The trade publication *Drug Topics* reports annually the average price of a drug prescription. This increased from \$1.361 in 1947 to \$2.830 in 1959 and \$2.980 in 1960 [6]. Taking 1947 as 100 the index would be 207.9 for 1959 and 219 for 1960. Despite obvious weaknesses, this series is much closer to reality, as reflected in common experience, than the BLS or implicit FRB indexes. As a test of consistency, when combined with the Commerce dollar expenditure series, it suggests a fairly steady growth in the per capita quantity of drugs consumed of about $\frac{1}{2}$ per cent per year. This appears more realistic than the FRB index, which implies a per capita increase in drug consumption of $2\frac{1}{2}$ times in 12 years.

The drug and medicine series should be improved. If necessary, man-hour statistics would be preferable to those now employed, or even the device used in the 1953 revision, which used very partial quantitative data. The best solution would be to obtain from the industry annual quantity data for groups of products already covered by dollar shipments in the Annual Survey of Manufactures, with some increase in detail if possible.

The following general procedure is suggested for annual indexes to replace those now based on deflated value series:

First, use should be made of all currently available physical quantity data, even where it is not of the best, and not corrected for quality changes. Second, arrangements should be made with trade associations to obtain, at least for the purpose of compiling the industrial production index, annual figures on production now compiled for intra-industry purposes. Finally, the Census should collect more annual quantity-of-production data in the Annual Survey of Manufactures. Such an addition would place but a trifling burden on the manufacturers, especially since almost invariably it would cover items for

⁸ *Business Week* describes this process as pricing new products "as high as the traffic will bear," to get a "fast profit," before competition forces a cut in the initial price [7]. Richard Carter quotes from the *New England Journal of Medicine* to cast doubt on the quality improvement supposedly contained in new drug models [1, p. 138]. Relevant data are also contained in the Kefauver hearings on drug prices [17].

which the production statistics are compiled for internal and/or trade association use.

Lastly, when production statistics are not obtainable by any of these means, man-hour statistics should be used instead of deflated value. The productivity correction factor should be derived by using the productivity change observed in the most closely related industry for which physical output figures are available.

IV. Invalid Quality Corrections

The FRB has adjusted the numbers of passenger cars produced for changes in (a) make and model; (b) auxiliary equipment; and (c) body styles. In principle this is a valid approach to quality correction. For the entire interval 1947-

TABLE 3—ADJUSTMENT FACTORS FOR PASSENGER CAR PRODUCTION 1956-1960;
INDEX NUMBERS, 1956=100

Year	Adjustment Factor			
	Car Models	Body Style	Equipment	Combined
1956	100.00	100.00	100.00	100.00
1957	100.18	100.48	100.83	101.50
1958	98.41	100.37	100.37	99.14
1959	97.58	100.37	99.76	97.71
1960	95.60	100.25	99.11	94.99

Source: Compiled from data contained in [18] and [5]. Weight factors applied as follows.

Car models: compacts, .8; Rambler and Studebaker, .9; "Big Three," 1.0; medium-priced cars, 1.2; high-priced cars (Lincoln, Cadillac, Chrysler, Imperial), 2.0.

Body style: per cent addition for 4-doors, 2; convertibles, 10; hard tops, 4; station wagons, 6.

Equipment: per cent addition for automatic shift, 7; power steering, 3; power brakes, 2; V-8 engine, 5.

1960, the number of automobiles produced increased 88.3 per cent, but the FRB revised index increased 141.4 per cent, an upward correction of 2 per cent per year.

We have reviewed this correction in detail over the last four years. We find it excessive, and in the last three years in the wrong direction. The movement toward more expensive, more powerful, larger and more elaborately equipped cars reached its peak in 1957. Thereafter the trend has turned downwards in one indicator after another, accelerating in that direction with the introduction of the "compact" cars in the 1960 model year.

Automatic shift equipment reached a peak of application on 79.9 per cent of cars in 1957, falling to 71.4 per cent in 1960. Cars with V-8 engines fell from 82.7 per cent in 1957 to 58.6 per cent in 1960. The proportion of highest-price cars fell while that of economy cars increased sharply. Average horsepower fell 23 per cent in the last two years, and in 1960 was below the 1955 level [18, 1961].

We have computed quality adjustments for the period 1956-60, covering about the same factors as the FRB, with results shown in Table 3. It is not

claimed that these adjustments are either complete (since there is omission of some equipment) or without a degree of duplication (as between car models and equipment). But it is claimed that they are correct in direction and in order of magnitude.

Table 4 compares for the same period indexes of the number of automobiles produced, this index corrected by the factors derived in Table 3, and the revised FRB index. For 1957, FRB made an upward quality adjustment of 3.6 per cent, instead of the 1.5 per cent shown in Table 3. For each of the following three years, with significant downward quality corrections indicated by the data, the FRB continued to make substantial upward corrections. The annual bias in the FRB correction averaged about 4 per cent per year. The cumulative bias for the four years is 16.6 per cent contributing an error of

TABLE 4—INDEXES OF PASSENGER CAR PRODUCTION, AND
QUALITY CORRECTION FACTORS, 1956-1960

Year	Production Indexes, 1956=100			Annual Quality Correction Factors Per Cent		
	Number Produced	Adjusted by Table 3	FRB	Table 3	FRB	Upward Bias, FRB Correction
1956	100.0	100.0	100.0		-	
1957	105.4	107.0	109.2	1.5	3.6	2.1
1958	73.1	72.5	77.8	-2.3	2.7	5.1
1959	96.4	94.2	104.9	-1.4	2.3	3.8
1960	115.4	109.6	127.8	-2.8	1.7	4.6

Source: Number produced from [18]. Indexes and percentages computed.

.6 per cent to the index as a whole, on account of the 3.6 per cent weight of passenger cars and original equipment parts, allowing for the extent to which the auto index is attributed to original equipment parts.

The writer cannot understand how the FRB arrived at adjustments for the last three years opposite in direction to that clearly indicated by the bulk of the relevant data. Note, however, the FRB statement concerning automobiles: "annual index reviewed by comparison with Census value of shipments data, deflated, for passenger cars" [8, p. S-9]. If that review governs, the auto index becomes just another deflated value series, with the FRB deflator obviously biased downwards, because of its inconsistency with the known quantity and quality data.

Are there exaggerated corrections for changing quality or product composition for other consumers' goods industries? The dairy products and tobacco products groups appear worthy of investigation in this respect.

For consumers' goods as a whole, Gehman has compared the trends of the revised FRB index and of Commerce Department estimates of consumer expenditures, deflated, and adjusted to comparable coverage [2, Chart 3, p. 35]. His chart shows the FRB index rising considerably more rapidly. In fact, the former series increased 64.7 per cent, the latter 45.8 per cent, over

the 13 years 1947-1960. If the Commerce figures are accurate, this indicates an upward bias of 13 per cent for the entire period, or almost 1 per cent per year in the FRB consumers goods index. This is on the assumption that distributive margins, included in the Commerce figures only, remained unchanged during the period. Actually they increased, so the FRB index should show a smaller rise, and the indicated bias is even larger.

V. *The Index as a Whole*

Research by Gehman permits an estimate of the order of magnitude of the over-all bias in the revised index. He has adjusted GNP data and omitted one section of industrial production to put the two on a closely comparable basis for coverage. The resulting Commerce-deflated nonfarm goods output

TABLE 5—ADJUSTED INDUSTRIAL PRODUCTION AND GNP NONFARM GOODS,
IN CONSTANT PRICES, SELECTED YEARS, 1947-1960
INDEX NUMBERS, 1947=100

Year	Industrial Production Excluding Construction Materials	GNP Nonfarm Goods Output Constant Dollars	Ratio of Industrial Production to GNP Nonfarm Goods
1947	100.0	100.0	100.0
1950	113.7	108.1	105.2
1953	140.0	128.6	108.9
1957	154.3	138.5	111.4
1960	166.8	145.5	114.6

Source Note: GNP Nonfarm goods output compiled from [16, Tables VII-6, p. 224, and VII-10, p. 226] and [12, Tables 66, p. 31, and 67, p. 32].

series is charted, together with the revised FRB index, on a base of 1946 = 100. The former falls short of 155, while the latter approaches 190 early in 1960. Gehman comments: "Over the whole 14-year period from the first half of 1946 to the first half of this year the difference in levels approaches one-fourth" [2, p. 44]. However, almost a 10 per cent difference opened up in the very first year, when postwar adjustments distorted many measurements.

The main conceptual difference is in the inclusion of distribution in a major segment of the Commerce statistics, enhancing the discrepancy, in view of the known rise in the relative importance of distribution. The development of the gap between the two series since 1947 has been remarkably steady, as shown by Table 5.

The cumulative divergence of 14.6 per cent for the thirteen years is equivalent to an annual rate of 1.05 per cent per year. Moreover, the rate of divergence is close to 1 per cent per year in each of the tabular intervals, except for the first, where it is slightly higher. The reader will recall that the rate by which the revised index exceeds its predecessor in growth is also about 1 per cent per year.

This is consistent with biases in separate segments of the index, as shown in Table 6. To these should be added biases, if any, in other segments of the index, and biases resulting from overweighting of fast-rising items because of inclusion of distribution and advertising in the weighting base. Consider two major items in the latter category, residential utilities and drugs, soap, and toiletries. The textual discussion justifies the opinion that these items are given at least twice their appropriate weight. If so, 100 per cent overweighting of these two items gives an upward bias of .09 per cent per year to the index. However, part of this is duplicated in weighting the biases shown in Table 6, so the entire .09 per cent cannot be added to the total shown therein.

Among the individual consumers goods items, automobiles, for the four-year interval 1956-60, shows an upward bias of 3.91 per cent per year, which,

TABLE 6—COMPILATION OF MAJOR BIASES, FRB INDEX

Index Segment	Per Cent Upward Bias		Weight	Contribution to Annual Bias in Total Index (per cent)
	Cumulative 1947-1960	Average Annual Rate		
Electricity	17.0	1.21	3.76	.045
Equipment and equipment materials	31.8	2.15	23.72	.510
Consumers goods	13.0	0.94	31.13	.293
Total			58.61	.848

Sources: Cumulative upward bias as shown in text, and Table 2. Weights from [8].

when appropriately weighted, contributes .144 per cent per year of bias to the entire index, or about half of the bias shown for consumers goods as a whole. A substantial portion of the remainder is accounted for by drugs. Calculated on the maximum basis developed in the text, that is, by use of the Drug Topics prescription price index, an average annual contribution of .09 per cent to the bias in the entire index is indicated for the period 1947-1959.

From the varied evidences adduced, the writer believes that substantial upward bias, perhaps of an order of magnitude of 1 per cent per year, is strongly indicated for the FRB index as a whole. But whether more or less than 1 per cent, the important thing is to recognize the existence of a bias and to understand its sources, so corrections can be made.

Gehman believes that the marked discrepancy between the revised FRB index and GNP data stems from errors in the price deflators used by the Commerce Department, and thinks they should be revised downward, resulting in a more rapidly rising real gross national product to conform with the industrial production index [2, p. 44]. It is the writer's conclusion, based largely on the analysis presented herein, that the discrepancy is mainly due to the upward bias in the revised FRB index, which should be changed accordingly.

There is widespread concern over the industrial and over-all economic growth rates, deemed by many to be inadequate in relation to international competition and the rising trend of unemployment. The present FRB index, and an upward revision of real GNP to conform to it, would contribute to a synthetic statistical "solution" to the growth problem, without easing its symptoms, and would tend to ward off actions making for a real solution.

There is concern, and among many a degree of distress, because of the upward "creep" in living costs. A downward revision of the price indexes used in GNP deflation, of which the CPI is the most important, would contribute to a statistical "stabilization" of living costs, without easing the symptoms of a continued actual rise. Moreover, it would be inequitable to those, principally wage and salary earners, whose income rates are either tied by contract to, or influenced by fluctuations in, the consumer price index.

The inconsistency between the revised FRB index and other series should be resolved by indicated revisions in the FRB index as follows:

1. Electric power production should be measured by a single series of all kilowatt hours, instead of by the present set of unevenly weighted series that wholly omit an important section of output. The same correction should be made for gas.

2. Weights for electricity, drugs, fluid milk, and various other commodities which now include a large proportion of distributive activities should be lowered to eliminate these activities from the weight base, even if some estimation is required for the adjustment.

3. Annual series based on deflated dollar value data should be eliminated. All sources of quantity data, even if imperfect and incomplete, should be given priority, and the power and influence of the government should be used to obtain annual quantity data in crucial areas where they are now lacking. Where quantity data are simply unavailable, or cannot be synthesized from materials consumption, or other indicators, man-hours data should be used in preference to deflated values. Deflated values should only be used for supplementary series of unmeasured miscellaneous or new products of an industry. In such cases, a parallel deflator can be inferred from quantity-value relationships of those major commodities for which quantity figures are available.

4. Where indexes are based on a compound measurement of units, with varying weights depending on quality or size specifications, details about the weighting system should be published, and the allowance for quality differentials should be modest. This applies to automobiles and cigarettes, among others.

5. Since 1958 Census benchmark data are already available, a fresh revision of the FRB index, along the lines suggested, can be combined with its adjustment to the 1958 benchmark. At the same time, the criticisms contained herein should be considered in constructing indexes of production from the 1958 Census.

VICTOR PERLO*

* The author is an economic consultant in New York.

REFERENCES

1. RICHARD CARTER, *The Doctor Business*. New York 1958.
2. CLAYTON GEHMAN, "Industrial Production in Current Analysis," speech before A.S.A., 1960 (multilith).
3. ———, letter to Victor Perlo, Nov. 30, 1960; modified in a subsequent letter, January 10, 1962.
4. MILTON GILBERT, "The Problem of Quality Changes and Index Numbers," excerpted in *Mo. Lab. Rev.*, Sept. 1961, 84, 997.
5. *Automotive Industries*, Philadelphia, Annual Statistical Numbers.
6. *Drug Topics* (New York) Mar. 27, 1961 and multilith tabulation.
7. *Business Week*, Dec. 10, 1960.
8. FEDERAL RESERVE BOARD, *Industrial Production, 1959 Revision*. Washington 1960.
9. *Federal Reserve Bulletin*, Dec. 1953.
10. ———, Oct. 1956, 42, 1056-57.
11. *Mo. Lab. Rev.*, May 1961, 84, 522.
12. *Survey of Current Business*, July 1961.
13. UNITED NATIONS, *Index Numbers of Industrial Production*, Stud. in Methods No. 1. New York 1950.
14. U. S. BUREAU OF THE CENSUS, *Annual Survey of Manufactures: 1957*.
15. U. S. BUREAU OF THE CENSUS, *Census of Manufactures 1947: Vol. IV, Indexes of Production*.
16. U. S. DEPT. OF COMMERCE, *U.S. Income and Output*. Washington 1958.
17. U.S. SENATE COMMITTEE ON THE JUDICIARY, SUBCOMMITTEE ON ANTI-TRUST AND MONOPOLY, *Administered Prices*, Pt. 16. Washington 1960.
18. *Ward's Automotive Yearbook*. Detroit annually.

The Revised Index of Industrial Production: Reply

Mr. Perlo's critique of the 1959 revision of the Federal Reserve industrial production index does not make a credible case for the existence of an upward bias in the index. It will serve a useful purpose, however, if it stimulates fresh critical inquiry by the economics profession into problems of analyzing fluctuations and growth in the industrial segment of the economy.

I. Major Considerations as to Output Levels

Index users need to be familiar with the ways that indexes are compiled, and index compilers need to know about the problems of users in various phases of their work. More general understanding of the industrial production index is of increasing importance as it becomes more widely used for such purposes as international comparisons of growth and the study of trends in resource utilization.

Cyclical and growth fluctuations in the commodity-producing industries have continued to play a dominant role in economic activity in recent years. Those of us at the Federal Reserve who work closely on the analysis and measurement of industrial production welcome the opportunity provided by

Perlo's article to comment on major measurement problems in this area and some of their implications for interpreting economic trends.

We can agree with Perlo in underlining the difficulties of deflating aggregates of final expenditures to compile accurate measures of real output and of developing current industry indexes following consistent groupings of activities and products. We also would stress the importance of broadening the nation's information on the physical volume of output and supplies of goods. But we cannot accept his conclusion that the accuracy of production measurement would be improved by giving priority to the use of all sources of quantity data, "even if imperfect and incomplete."

This reply to Perlo's critique is directed mainly to his view that the index has an upward bias of about 1 per cent per year. It comments on his impressions that all features of the 1959 revision operated to raise the growth rate of the index and that special deflated annual indexes developed at that time contributed a major share of the upward revision. It discusses his criticism of the coverage by the index of certain distribution activities, such as those for electricity, and of the inclusion of business services, such as advertising outlays for cigarettes, in the value-added weights. This reply also discusses his criticism of the adjustment for product changes in autos and his general conclusion that the extent of the bias in the total index can be determined in part by comparisons with deflated GNP measures.¹

The question of bias. Perlo's view that the rise in the industrial production index has been overstated is of special interest these days when other analysts are more concerned that existing industrial production measures may not adequately reflect the rapid proliferation of new products in prepared foods, electronics, chemicals, and miscellaneous categories of consumer goods, as well as the sharp expansion in space and missile manufactures and the accelerated development of automatic-control and processing equipment. And the record since the early postwar period has been one of net upward revisions in national data on employment, expenditures, and output, when benchmark data have become available.

This is not to suggest that overstatements in the index cannot develop for the total and especially for particular industries. The apparel industry, not discussed by Perlo, is one important category whose index probably has been too high in recent years. The broad range of industrial materials and products directly represented in the total index—now including over 200 monthly series—provides more limits on the possible development of an over-all bias due to any biases in specific series and weights than existed during the early phases of the index when it included only major materials and a very limited range of intermediate and finished products.

The 1959 revision. The foremost influence on the level of the index in the

¹ Some aspects of the 1959 revision of the index might have been more easily understood if it had been feasible to provide more specific descriptions of the adjustments made in the levels of individual series in the monthly index. The *Industrial Production: 1959 Revision* publication [3], however, already ran to 230 pages of analysis and descriptive and tabular material, including about 90 charted comparisons of series. It was supplemented by the publication of a chart book which showed some 220 individual monthly indexes plotted on ratio scale to facilitate cyclical and growth comparisons.

1959 revision (apart from the addition of the utility industry) was the adjustment to 1954 Census of Manufactures results. These results showed that output of manufactures in the Board's published index on a 1947 weight base was understated, since the index showed a rise of 26 per cent rather than 31 per cent from 1947 to 1954.

Some major decisions made in the 1959 revision operated to lower the amount of the upward adjustment. These decisions included: the selection of more recent weights for the period beginning in 1953, which resulted in less importance being assigned to faster growing industries; the use of the 1957 Standard Industrial Classification for manufacturing that included the slower-growing fluid milk industry; and a correction for undercoverage in the 1947 Census.

The use of special deflated annual indexes to which Perlo refers had relatively little impact on the revision compared to the adjustment to the Census results. The annual indexes provide interpolations between the comprehensive 1954 Census results and those of 1947, and in broad terms extrapolations of output changes for the period since 1954. These annual indexes were compiled to limit the general tendency demonstrated earlier to downward bias in major man-hour and a few physical-product components of the index. Even with the adjustments for productivity changes that had been determined on the basis of the annual indexes calculated in the 1953 revision, the level of output for these components had been understated in the 1951-55 period.

At the time of the 1959 revision it was possible to compile deflated annual indexes from the Census Annual Surveys which were available for the years 1955, 1956, and 1957. Most final data from the 1958 Census of Manufactures have only recently been published. Data on fuel use from the 1958 Census and Annual Survey inventory figures for 1959 needed to calculate output changes from shipments data did not become available until February 1962, the time of this writing.

Consequently, the current monthly indexes for industries represented annually by deflated series are calculated largely from data that have been carried forward from preliminary 1957 levels. For these and other reasons the deflated annual indexes have much less effect on the recent levels of the index than Perlo suggests. In this connection it was observed in the first paragraph of the December 1959 *Federal Reserve Bulletin* article that the revision of postwar levels of growth was "especially from the end of 1950 to mid-1955" [7, p. 1451]. The early part of 1955 reflected some effects of the benchmark adjustments through 1954.

In connection with the Census benchmark as well as the annual deflated indexes there have been no "specially constructed FRB deflators" used for these purposes. The only major departure from the use of official published Bureau of Labor Statistics price indexes (and the unit values implied in the Census) was in the calculation of production data for communication equipment where an unpublished price series supplied by a trade source was used.

It was taken for granted in the description of the 1959 revision that only departures from the use of official sources for prices and other data would be specifically noted. Thus all references to "deflated" in the series table on pages S-4 to S-19 of the *1959 Revision* related to the use only of BLS data.

If there is any misunderstanding on this point, we owe Perlo and other users an apology.

Perlo is properly concerned about the effect of production index adjustments for autos and other types of durable equipment. However, practically all of the net upward effect of the 1959 revision reflected revisions in series for nondurable manufactures and the addition of indexes for the utility industry. The charts in the December 1959 *Bulletin* [7] clearly indicated that there was no appreciable upward revision in the level of durable goods manufactures. Yet the durable goods portion of the total index involved about two-thirds of the deflated annual sources shown in Perlo's Table 1.

1954 Census benchmark. The Census benchmark analysis, rather than the deflated annual indexes, was so basic to the 1959 index revision that its results might have been expected to be the primary object of Perlo's critique (see *Indexes of Production*, Census of Manufactures, 1954 [5]). That document is an important item, and knowledge of it is essential to an understanding of the basis for the adjustments in the levels of series and certain other aspects of the 1959 index revision. It (together with its 1947 Census predecessor) is a unique, authoritative source of material on real economic growth in the industrial segment of the economy. If any improvements in the analysis could be developed, they would be of value in the determination of the next set of benchmark indexes to be calculated from the 1958 Census of Manufactures.

There was a general effort in the development of the 1954 benchmark to extend the use of direct quantity measures. As shown on page 16 of the Census volume, 86 per cent of total manufacturing output was represented by industries for which physical quantity data were available, compared with 75 per cent in the 1939 to 1947 calculation, and about 60 per cent for the earlier Census index calculations.

The remaining industries in the 14 per cent area of "indirect representation" were those for which no homogeneous units of physical output were available, and included those making a wide miscellany of consumer goods, commercial printing, scientific instruments, and miscellaneous metal fabricated products. The decision to use deflated values in most of these industries was made after statistical tests with the "directly represented industries" had shown that this approach would probably result in a smaller error than an assumption that their productivity changes had been similar.

Perlo is mistaken in indicating (p. 4) that the industrial production index makes no allowance for output changes in an industry when they differ from changes shown by the primary products of the industry. The use of "coverage adjustments" has been a regular feature of the benchmark calculations for many years, and these were further refined in the 1954 Census volume.

Changes since 1954. The remaining portion of the question of possible overstatement in the industrial production index relates to the period since the 1954 benchmark. Until additional benchmark results for the 1958 and 1963 Censuses of Manufactures are available no final conclusions on this question for the whole period are possible.

Since Perlo is willing to accept the evidence of "all sources of quantity data," the changes shown by the physical product series in the monthly index

are of interest. (These are described and charted in the *1959 Revision* [3, pp. 22-24.]) The average level of these series rose 9.1 per cent from 1954 to 1958, as compared with 8.8 per cent shown by the total index. For the whole period from 1954 to the beginning of 1962 the rise was about 33 per cent for physical products and 34 per cent for the total index.

Despite Perlo's faith in quantity data per se, it should be emphasized that during some critical periods, such as 1951-52, activity in certain major industries such as aircraft and machinery, for which there are no adequate monthly physical product data, has moved quite differently from activity in industries producing metals, textiles, and many consumer goods where monthly product data are available. In recent years, output of steel, fuels, and some of the other major items in the physical product portion of the index has been relatively low. Meanwhile, activity in the electronic, chemical, and space product industries has expanded sharply so that again in this period the physical product series may not fully indicate the course of the total industrial production index.

The results of broad comparisons based on man-hours worked, industrial electricity consumption, freight movements, output of major industrial materials, and deflated manufacturers' shipments of goods do not indicate any major shifts since 1954 in their longer-run relationships to the output index for manufactures or to the total index. The level of the total index, for example, increased relative to total BLS production-worker man-hours for manufacturing, mining, and utility industries by 37 per cent over the benchmark period 1947 to 1954, while from 1954 to 1961—another 7-year interval—the indicated increase was 36 per cent. In fact, however, there may have been some acceleration in the actual rate of increase in recent years.

II. *Other Aspects of Measurement*

Detailed comments on each of Perlo's criticisms are not being undertaken in this note, but comments on some of them seem to be merited.

Coverage considerations. Problems of industry definition necessarily involve some rather arbitrary solutions; and the continued growth of industrialization tends to widen the defined areas of manufacturing. A major consideration for measurement purposes is the importance of avoiding any significant duplication of activities among industrial establishments and between industrial production and activity measures for other segments of the economy.

In the 1954 Census and the 1957 version of the SIC there were several instances of a widening of the coverage of manufacturing activities. Among the additional activities included were the processing and distribution of fluid milk. Appropriate adjustments were made for this change to maintain comparability in the Census and industrial production figures. The effects in the 1959 revision of adding the series for fluid milk, including the distribution activity involved, were not negligible since it has a weight of 1.1 per cent of the total index and it has risen much less than the total index since 1947.

Electricity distribution. The coverage of electricity and gas distribution by the index appropriately follows from the scope of the activities repre-

sented in this segment of the economy according to national standards (SIC #491-3) and usual practices in foreign countries, as defined in group #51 of the International Standard Industrial Classification. (Perlo has erred on this point in quoting from a summary section of the United Nations report *Index Numbers of Industrial Production* [4, p. 7], rather than from the relevant section in that report on scope and grouping [4, p. 10].)

It is true that the representation of electricity generation and its distribution to residential customers may be questioned on the ground that the index should be limited to the traditional products of manufacturing and mining. Both electricity and gas, however, are materials and their representation in industrial production of consumer goods seems to us less subject to question than their inclusion as consumer services in measures of prices and of outlays.

As Perlo suggests, there is some basis for differences of interpretation regarding the precise allocation of estimated value-added figures for the separate classes of electrical and gas utility sales represented in the index. From the critical viewpoint of economic analysis there is much to be said for distributing the importance of the value-added figures approximately in relation to the revenues involved for each class of sales. Even if it were proper to count electric kilowatt sales (and gas therms) equally, such a change would reduce the current level of the total index relative to 1947 by only .5 per cent.

Industrial generation. Another question raised by Perlo on electricity relates to the desirability of compiling and including separate production series for industrial self generation. To allocate self-generation output by 3-digit SIC industries would involve the calculation of many additional monthly indexes. However desirable additional detailed series might be in such industries as chemicals, paper, and primary metals, which are among the main self-generators, they would have little effect on the movement of the total index. Self-generation is estimated to account for less than .5 per cent of total industrial value added in 1957 and in the present index this value added is assigned to the movement of directly represented production series. Over the period from 1947 to 1959 the total index rose 61 per cent, compared with an increase of 60 per cent in self-generation, as noted in the *1959 Revision* [3, table and footnote p. 17].

In this connection and with a view to strengthening the current monthly series on industrial production, the Federal Reserve System has inaugurated in recent years a national project to compile electric power consumption data by standard industry classifications of manufacturing and mining groups of establishments. These data will include monthly figures on self-generated power and on sales by electric utility companies to industrial establishments. Already this information is beginning to yield supplementary results which at times help to interpret movements in other measures.

Miscellaneous business services. With regard to the inclusion of advertising and other business services in the value-added weights for the production series, they apparently have little over-all influence on the movement of the total index. In the case of cigarettes, it is true that a reduction in their im-

portance (relative to cigars) would result in less rise in the tobacco products group, but with the importance of cigarettes reduced, the total index would rise more because cigarettes have risen less than the total.

Perlo mentioned only advertising expenditures, but manufacturers' outlays for contract repairs and professional fees are even larger. The differential effects on weights of these various purchased services, including advertising, within the industrial total are largely offsetting as discussed in the weight section of the *1959 Revision* [3] and in the 1954 Census benchmark volume [5, p. 27].

Adjustments for product changes. Ridicule of "fins" on autos and eye-catching pronouncements about other aspects of our affluent economy may have diverted economists in this country from giving more serious attention to the subject of real changes in production and prices. Broadly viewed, from the early postwar years of ersatz products, general shortages, and excessive demands for goods to the situation in recent years of ample available resources and technologically advanced levels of industrial operations, there have been many logical and empirical grounds for noting a general improvement in the product characteristics of goods available.² The development of strong, competitive pressures on output and prices, including the sharply expanded supply of cheaper foreign goods, has been an important consideration in interpreting economic trends over the postwar period.

More intensive efforts to isolate product changes in price indexes from 1945 to 1961 would probably still leave most deflated output measures too low. For this reason, too, and because some output measurements are still based only on the weight of materials involved or simple numerical counts of various complex products, the production index probably provides a minimum statement of the rate of industrial growth both before and after 1954.

Perlo quotes with approval Milton Gilbert's references to "flights of fancy" corrections for index price changes which "would give doubtful results when transferred to the production index" [2]. Gilbert's conclusions may be pertinent to such style items as ladies' hats, but some of the examples he cited, such as more durable cloth and tires of greater mileage, certainly do have measurable implications for changes in employment and productivity rather than the "absurd results" suggested by Gilbert. One of the practical approaches to the problem of measurement of product changes is to be found in the use of more detailed breakdowns as in the case of textile fabrics, home freezers, tractors, and electric generators, as noted in the description of the 1959 revision.

Motor vehicles. It is gratifying to note that Perlo agrees with the principle of drawing on available data to make at least a partial adjustment for changes in specifications for passenger automobiles. Since the beginning of 1960, as a result mainly of the shift to compact cars, no further upward adjustment for

² In addition to last year's Congressional hearings, *Government Price Statistics* (Hearings before the Subcommittee on Economic Statistics, Joint Economic Committee, 87th Cong., 1st sess., Pt. 1, January 24, 1961), which contain many references to the price deflation problem, a recent article of interest is by Murray Foss [1].

changes in specifications for autos has been made in the published monthly production index. Using the product specifications provided by Perlo, the auto assembly series seems to have been overstated in the 1958-60 period relative to 1956-57. However, the trend of changes in auto specifications since 1958-60 also needs to be taken into account to judge the adequacy of current output levels. For example, important improvements have been introduced in the 1961 and 1962 models, including compacts, such as additional equipment, better lubrication systems, self-adjusting brakes, and the like, so that the current level for the auto series is not necessarily too high relative to 1956 and earlier periods.

The development of independent measurements of passenger-car characteristics received attention in the material developed in last year's Congressional hearings on Government Price Statistics. A recent updating of one of these studies by Zvi Griliches using nine specification variables relating to the three major low-priced autos was made in a paper presented at the 1962 Conference on Research and Wealth of the National Bureau of Economic Research. This study showed a further rise in "quality" adjustments for the period as a whole from 1956 to 1960-61, while Perlo's calculated corrections declined 5 per cent from 1956 to 1960. This is a subject on which the engineering talents and staffs of the auto companies might well make a major contribution.

In reviewing the figures for the auto series it is necessary to consider also the adequacy of the index measurements for the total volume of goods produced by the motor vehicle industry and the effects of auto product changes on other industries. Thus, a major part of the impact of the shift in the size and weight of vehicles is reflected in other sectors of industrial production such as the glass, steel, and textile industries. The production index measurements are designed to reflect the total contribution of the motor vehicle industry, so that in addition to the auto assembly series there are involved the production series for replacement and for original equipment parts, and for trucks and other products of the motor vehicle establishments. These series are also difficult to establish with accuracy and in some cases have an important downward bias. For example, there is no allowance in the index for the marked gains in performance of late-model trucks compared with those produced in the period immediately after the Second World War.

Deflated GNP comparisons. Perlo makes several references, which are probably of general interest, to the results of confronting industrial production indexes with GNP constant-dollar measures. At one point he cites a comparison of industrial output of consumer goods with personal consumption expenditures for goods in a paper presented by the author at the 1960 annual meetings of the American Statistical Association [8]. That comparison of the monthly production series with the quarterly expenditures data was made to illuminate differences in the cyclical behavior of the two series. Any attempt at an exact accounting of differences in growth trends for these two measures would involve a variety of considerations, including coverage and weight influences, that cannot be adequately discussed here. The effects, however, of a decision by the compilers of the gross national product data

not to accept the results of the Census benchmark flow figures for the year 1954 relative to 1947, but to scale them down by $1\frac{1}{2}$ per cent (*U.S. Income and Output*, 1958, [6, p. 75]) should not be overlooked in such a comparison. This percentage was related to the total figure for personal expenditures on goods and services in 1954 and the difference might be more or less than that percentage for the gross factory value of consumer goods alone.

The comparison of differences in the GNP and production-index series for equipment indicated in Perlo's Table 2 is certainly worthy of further analysis and much more detailed attention than is possible in this note. As he suggests, the differences between these series cannot be pinned down exactly, so that the shifts shown between 1947 and 1953 may not be too significant. The presence of large differences since 1953 was noted in the *1959 Revision* publication and attributed partly to the difficulty of taking into account product improvements when price indexes are used to deflate estimated outlays for equipment. Perlo concludes that it was unlikely that a difference in actual prices could be much of an explanation, because he said there was an increase of 5 per cent in the Commerce deflator between 1957 and 1960 which would explain only half of the discrepancy between the output and expenditure series. In such a period, however, actual prices could decline as well as continue unchanged.

Perlo states in his conclusion that deflated dollar value data should be eliminated from the annual production series and that product data or even man-hour data should be used in preference. This statement is hardly consistent with his use of deflated GNP data to calculate a quantitative measure of the extent of upward bias in the production index, as shown in Table 6.

Only one illustration need be given of his handling of the price aspects of the deflation problem. In a section on drug price changes from 1947 to 1959 he cites a decline of 10 per cent in the BLS wholesale price index, a rise of 23 per cent in the consumer price index, and an increase of 108 per cent in prescription prices from a trade source. He concludes that the last change is the most realistic and that such a retail price series for prescriptions prepared in a drugstore would be an appropriate deflator for factory values of basic medicinal items!

No real solution of questions of bias in price series or in the production index can be accomplished by the simple expedient of adjusting any set of numbers to the level of another. Readers will find no support in the source cited by Perlo [8, p. 117] for the view that real GNP should be raised to conform with the industrial production index. The GNP constant-dollar series may be too low because of the assumptions used regarding productivity changes and for other reasons, in addition to problems of price deflation, but the course of industrial production by itself does not demonstrate such a conclusion.

Some problems of real product measurement are statistically insoluble and even continuous, close review of issues relating to classification, representation, series, and weights cannot assure perfectly exact production indexes either currently or at benchmark intervals. Further refinements in the

production indexes are desirable and possible, and additional critical attention to these and other economic measures is likely to contribute to improvements in both the data and their interpretation.

CLAYTON GEHMAN*

REFERENCES

1. MURRAY FOSS, "How Rigid are Construction Costs During Recessions?" *Jour. Bus. Univ. Chicago*, July 1961, 34, 374-83.
2. MILTON GILBERT, "The Problem of Quality Changes and Index Numbers," excerpted in *Mo. Lab. Rev.*, Sept. 1961, 84, 997.
3. FEDERAL RESERVE BOARD, *Industrial Production 1959 Revision*. Washington 1960.
4. UNITED NATIONS, *Index Numbers of Industrial Production*, Stud. in Methods No. 1. New York 1950.
5. U.S. BUREAU OF THE CENSUS, *Census of Manufacturers, 1954: Vol. 4, Indexes of Production*.
6. U.S. DEPT. OF COMMERCE, Office of Business Economics, *U.S. Income and Output 1958*.
7. "Revised Industrial Production Index," *Fed. Res. Bull.*, Dec. 1959, 45, 1451-54.
8. CLAYTON GEHMAN, "Industrial Production in Current Analysis," *Am. Stat. Assoc., 1960 Proceedings of the Business and Economics Statistics Section*.

*The author is chief of the Business Conditions Section. Division of Research and Statistics Federal Reserve Board. The views expressed are those of the author and do not necessarily reflect the views of the Board of Governors of the Federal Reserve System.

The Bethlehem-Youngstown Case and the Market-Share Criterion: Comment

In a recent communication in this journal [8] Lucile Sheppard Keyes expressed a fear that the market-share concept will have a role of "great practical significance" in the treatment of horizontal mergers. She is afraid that the courts will interpret the amended Section 7 of the Clayton Act so as to prohibit only those horizontal mergers that "would combine suppliers of 'large' percentages of the output of some 'product,' or would increase the share of the 'product' accounted for by a firm with an already 'large' existing share" [8, p. 644]. Mrs. Keyes finds support for this prediction in the district court's opinion in the Bethlehem-Youngstown case. She suggests that the best available course might well be "to prohibit mergers between firms significantly competitive with one another," [8, p. 654], rather than to prohibit those mergers that may substantially lessen competition or tend to create a monopoly in any line of commerce in any section of the country as judged by the effect of the merger on the market share of the acquiring company.

The purpose of this note is to take issue with Mrs. Keyes's conclusions on

two grounds: (1) several recent cases indicate that her pessimism about the effectiveness of the market-share criterion in stopping horizontal mergers is unwarranted, and (2) the alternative criterion she suggests would very likely achieve no better, if not worse, results.

I. The Market-Share Criterion in Other Cases

The use of the market-share criterion has already resulted in a number of Federal Trade Commission and lower court decisions to stop or dissolve horizontal mergers that clearly would have been allowed under either the old Clayton Act (if they had been stock acquisitions) or the Sherman Act.¹ The markets have been defined very narrowly both with respect to the line of commerce and the section of the country, and the condemned market shares in some cases have been quite small compared with those applied in Sherman Act cases. Mrs. Keyes, herself, in discussing Bethlehem-Youngstown [8, p. 647] says:

On the other hand, it must be admitted that the percentages at issue in this case, while large as compared with the negligible share attributable to the member of a pure-competition industry, are small compared to the shares considered significant in Sherman Act cases. . . . This relative smallness becomes more impressive when it is noted that the proposed merger was found to be (prospectively) in violation of the statute in *each* of the markets considered.

This observation does not, however, allay the fears of Mrs. Keyes, who goes on to say:

The essential point is, however, that some minimum share may be crucial in the law's application; furthermore, what may be large enough for one judge may be much too small for another.

The share of the market that is used, however, must be considered in conjunction with the breadth of the definition of the line of commerce and the section of the country. In the Bethlehem-Youngstown case the district court was willing to declare the merger unlawful on the basis of proof of substantial lessening of competition in a market as small as that of "hot rolled bars" in Ohio [8, p. 647]. Citing this case as a precedent, Judge Weber, in the Brown Shoe Company case [11, p. 736], found a relevant market by which to judge the acquisition of the Kinney Company by Brown to be the retail market for shoes in any city in the country in which a Kinney store and a Brown store are operated.

In the Erie Sand and Gravel Company case the Federal Trade Commission distinguished between "lake sand" and "pit or bank sand," and defined the market geographically as a strip along the southern shore of Lake Erie extending twelve miles inland. This decision was reviewed by the Third Circuit Court of Appeals, which rejected the distinction between lake and pit sand

¹ Before the 1950 amendment to Section 7, the Clayton Act applied only to the acquisition and continued holding of the stock of one corporation by another. Mergers of any other type were subject to scrutiny by the Justice Department under the general prohibitions of the Sherman Act. See [9, pp. 104-23, 268-72].

[4]. The court, however, recognized that the high transportation cost of sand prevents lake sand from effectively competing with pit sand very far inland. In arguing the case on appeal, the Commission's attorneys substituted eight discontinuous areas around the port cities for the continuous strip. It was on this ground that the court remanded the case to the Commission for further consideration. Significantly, however, the court said that "the government's proposed definition of the relevant market area is not on its face inconsistent with anything in Section 7 of the Clayton Act."

The Ninth Circuit Court of Appeals recently reviewed another decision of the Federal Trade Commission, in which the Commission ordered Crown Zellerbach to divest itself of the assets of the St. Helen's Pulp and Paper Company [5]. Since this was the first case to be decided on its merits by the Commission and the first to be finally reviewed by a Court of Appeals, it is likely to become an important precedent and needs to be considered carefully in evaluating the new statute.

The Commission decided that the relevant line of commerce was "coarse paper" as defined by the Census Bureau, although the respondent urged the inclusion of other types of paper products [6, p. 3]. Crown Zellerbach argued that the relevant section of the country should be the whole United States, or at least the part west of the Mississippi River. The Commission decided instead to use the eleven western states on the grounds that sales made in that area by producers located to the east were "relatively insignificant." With the relevant market thus defined, there were only ten producers in the market, and during the year of the acquisition the market shares of Crown Zellerbach and St. Helen's were 51.5 and 11 per cent, respectively.

The court upheld the decision of the Commission, but it went even further in narrowing the definition of the market. The court added "manufactured bags" to "census coarse papers" as the relevant line of commerce, but it ruled that the three Pacific Coast states were the proper section of the country. The court explicitly stated that "the line of commerce need not even be a large part of the business of any of the corporations involved." Furthermore, the Ninth Circuit Court of Appeals gave its sanction to Judge Weinfeld's distinction between the Sherman Act criterion on monopolizing and the new Clayton Act criterion by quoting with approval this statement from the Bethlehem opinion [10]:

... when the question is power over price, substitute products may be relevant because they can limit that power. The issue under Section 7 of the Clayton Act is not whether a merger may result in a company having power over price or the power to exclude competition. The issue under Section 7 is whether there is a reasonable probability of substantial lessening of competition.

The ultimate test of the meaning of the standard of legality contained in the amended Clayton Act will come only when a series of cases have been decided by the Supreme Court. These two Circuit Court of Appeals opinions, however, indicate that a policy is evolving that will prohibit horizontal mergers among firms competing in *any* market so long as the resulting concentra-

tion of control in such a market is sufficient to convince the judge that a tendency toward monopoly or a substantial lessening of competition may result. Mrs. Keyes objects to the use of such a criterion because it requires the application of a rule of reason that may result in the statute prohibiting only those acquisitions that involve firms with large market shares.

Furthermore, she sees a contradiction inherent in the statement of Judge Weinfeld that the issue is not, under the Clayton Act, "whether a merger may result in a company having power over price or the power to exclude competition." She points out [8, p. 646] that a more expedient way around the Cellophane doctrine would have been simply to have accepted the relevance of substitute products and required a smaller share for a violation of the Clayton Act because

. . . the argument used here tends to undermine the entire orthodox rationale for the consideration of market shares in merger cases: If "the power to control prices or exclude competition" is not at issue under Section 7, then why invoke the elaborate apparatus of market definition and percentage share computation which is alleged to be specifically designed to measure "market control" or "monopoly power"—i.e., the power to control prices or exclude competition?

Ambiguous as it may be, Judge Weinfeld's reasoning can be defended on these grounds: Congress clearly intended that the new Clayton Act standard of illegality be such as to prohibit some mergers that would be allowed under the Sherman Act test. The Sherman Act test required the plaintiff to demonstrate the relevance of a market defined in terms of products to be included as well as in terms of some geographical limitation. Within such a market the share of the accused firm had to be large. A body of precedents exists for evaluating *all three* of these aspects of a case at bar—particularly the Alcoa, Columbia Steel, and Cellophane decisions. In enacting the new legislation Congress was instructing the courts to depart from the existing precedents in the direction of prohibiting more mergers. Why should the change be made only with respect to market shares? Economists certainly have no objective method of delineating a market. A subjective value judgment must be made. Congress was dissatisfied with the judgments under the Sherman Act, but the Celler-Kefauver Act provided no new method of making decisions. It simply called for value judgments by judges and the Federal Trade Commission that would place a lighter burden of proof on the government than the Sherman Act required in merger cases. In effect, Judge Weinfeld and the Ninth Circuit Court of Appeals, have decided to implement the new Congressional policy by providing new precedents that change the law with respect to the definition of the product and the section of the country as well as the magnitude of the market shares required for conviction. It is, of course, true that the Bethlehem-Youngstown decision does not provide a *rule* for market definition that is "any more objectively determinate . . . than that which would be appropriate under Section 2 of the Sherman Act" [8, p. 646]. But it does provide a *precedent* that will serve to make it easier for the government to stop horizontal mergers.

In the recent Clayton Act cases the courts have shown their willingness to prohibit mergers with horizontal aspects on the basis of a showing that previously independent suppliers of some clearly defined and well recognized product to customers in some geographical area recognized as a trade area have been joined by the merger, even though their market shares are small as compared to the Sherman Act precedents. Is this not what Congress intended? What are the alternatives to such a case-by-case examination of the effects of a merger on the structure of control of the relevant markets?

II. *The Keyes Criterion*

Mrs. Keyes suggests that "... to prohibit mergers between firms significantly competitive with one another might well be the best available course." She recognized that such a criterion raises a conceptual problem of defining "significant competitiveness," saying [8, p. 654]:

It is necessary to draw a definite and defensible line between the competitiveness which will make a merger subject to legal control and the general competitiveness between each pair of firms in the economy; and the rough distinction between "potential" and "actual" competition is not sufficiently precise to serve this purpose.

Mrs. Keyes, therefore, further suggests [8, p. 654]:

... that the legal test of significant competitiveness among merger participants be satisfied by showing that some nonnegligible amount of dollar revenues of one participant is accounted for by sales for which buyers would have substituted the other participant's product, had it been offered at the lowest cost-covering price, if the actual seller had withdrawn his supplies.

Although this line is reasonably precisely drawn conceptually, it would be extremely difficult for the Justice Department or the Federal Trade Commission to prove its allegations with substantial evidence. Just as the court must now decide subjectively on the relevant market and the effects of a market-share increase, it would have to speculate about what buyers would have done if things had been different. Furthermore, the judge would have to decide what constitutes a "nonnegligible amount of dollar revenues." Would this be interpreted to mean a "substantial amount"? If so, we would return to a criterion of illegality very similar to that used by the Federal Trade Commission and the courts in interpreting the original Section 7.

I have argued elsewhere [9, Ch. 3-5] that it was this interpretation of the language of the statute rather than the so-called assets loophole that really emasculated the statute. The original Section 7 of the Clayton Act prohibited a stock acquisition [2].

... where the effect of such acquisition may be to substantially lessen competition between the corporation whose stock is so acquired and the corporation making the acquisition, or to restrain such commerce in any section or community, or tend to create a monopoly of any line of commerce.

Thus, the "substantial lessening of competition" part of the criterion applied to competition between the parties to the merger rather than to competition in a market.

In the first court test of the meaning of this language in the 1922 Alcoa case [3, p. 409], a majority of the Court of Appeals held that, since the law contemplated potential competition, it was not necessary to prove that the two companies actually had been in competition with each other before the acquisition. One judge, in a dissenting opinion, argued that competition between the firms must have existed for the law to be violated. The latter interpretation became the law after the Supreme Court opinion in the International Shoe case in 1930, which said [7, pp. 297-99]:

Thus it appears that in respect of 95 percent of the business there was no competition in fact and no contest, or observed tendency to contest, in the market for the same purchasers; and it is manifest that, when this is eliminated, what remains is of such slight consequence as to deprive the finding that there was substantial competition between the two corporations, of any real support in the evidence. . . .

Mere acquisition by one corporation of the stock of a competitor, even though it results in some lessening of competition, is not forbidden; the act deals with such acquisitions as probably will result in lessening competition to a substantial degree . . . that is to say, to such a degree as will injuriously affect the public. . . . If it be conceded that the entire remaining 5 percent of each company's product (although clearly it was materially less than that) was sold in competitive markets, it is hard to see in this, competition of such substance as to fall within the serious purposes of the Clayton Act.

The Court thus judged substantialness in terms of the share of the total business of the two firms that was done in competition with each other, rather than the shares of the total sales in any particular market that were in the hands of the two parties to the merger. As a result of this decision, the Federal Trade Commission adopted the policy that the public interest is best served by preventing mergers between companies that displayed a substantial proportion of their business in competition with each other irrespective of the structure of control of the particular markets in which they operated [9, Ch. 5].

The Celler-Kefauver Act, by changing the language of the criterion of illegality of Section 7, superseded the pre-1950 Clayton Act precedents. By including asset acquisitions, the 1950 legislation superseded the Sherman Act precedents. A new body of law on mergers is now being evolved. Mrs. Keyes's proposal would allow the courts to draw upon the old Clayton Act precedents by refocusing on the relationship between the merging firms. Where two firms sell some product in a particular section of the country, the effect of their merger does not necessarily depend on how much they sell of other products in other markets. But a court might well look to just this sort of evidence in evaluating the substantialness of the revenues of one participant from sales for which buyers would substitute the other participant's product. Such a merger might be classified as conglomerate, and thus be

beyond the scope of Mrs. Keyes's discussion. Yet it would be a horizontal merger from the standpoint of the market in question. It would be difficult to find a horizontal merger, if we defined that term to include only mergers between firms all of the sales of each of which are in the same markets as the other.

The suggested change in the law would not avoid the disadvantage of having to submit to judicial determination questions of fact very hard to discover by objective examination. The rule of reason would remain, and the results might very well be a less economically meaningful administration of the antimerger law.

DAVID DALE MARTIN*

REFERENCES

1. 15 U.S.C.A., 18.
2. 38 Stat., 731.
3. *Aluminum Company of America v. F. T. C.*, 284 F. Rept. 401 (C.A. 3, 1922).
4. *Erie Sand and Gravel Company v. F. T. C.*, 29 LW 2571, (C.A. 3, May 29, 1961).
5. *Crown Zellerbach Corporation v. F. T. C.*, 29 LW 2593, (C.A. 9, June 5, 1961).
6. *Crown Zellerbach Corporation, Opinion of the F. T. C.*, Docket No. 6180 (December 26, 1957).
7. *International Shoe Company v. F. T. C.*, 280 U.S. 291 (1930).
8. L. S. KEYES, "The Bethlehem-Youngstown Case and the Market-Share Criterion," *Am. Econ. Rev.*, Sept. 1961, 41, 643-57.
9. D. D. MARTIN, *Mergers and the Clayton Act*. Berkeley and Los Angeles 1959.
10. *United States v. Bethlehem Steel Corporation*, 168 F. Supp. 576 (1958).
11. *United States v. Brown Shoe Company*, 179 F. Supp. 721 (1959).

*The author is associate professor of business economics and public policy in the School of Business, Indiana University.

The Bethlehem-Youngstown Case and the Market-Share Criterion: Reply

Mr. Martin's criticism of my proposed criterion seems largely based on two misunderstandings, which I hope now to correct. The first misunderstanding is the assumption that the phrase "nonnegligible amount of dollar revenues" could be interpreted as referring to a proportion of the total sales of the participant firms, and the second is the assumption that the determination of this amount would be left up to the judges.

The only purpose of the word "nonnegligible" in this criterion is to serve as a supplement to, or perhaps even as a substitute for, the exemption for very small firms, which was suggested on the following page. If the resources

used up by the Department of Justice, the federal courts, and private antitrust litigants were free goods, there would be no justification for either of these limits, which are designed simply to insure that effort is directed along lines of apparent maximum benefit. The dollar amount should be determined, after an empirical study of past mergers, with a view to inclusion within the law's reach of as many anticompetitive mergers—beginning at the top of the size range of affected sales and proceeding downward—as the budget of the Antitrust Department could accommodate without encroaching on more urgent uses for public funds, due account also being taken of the costs to the courts and private litigants. This minimum should be either written into the law as a dollar amount, with provision for periodic amendment to take into account changes in the price level and other relevant variables, or administratively determined, at appropriate intervals, subject to Congressional review.

Martin also observes that "the suggested change in the law would not avoid the disadvantage of having to submit to judicial determination questions of fact very hard to discover by objective examination." It is probably unrealistic to expect to develop antitrust criteria capable of being administered by computers. However, it does not seem impossible so to state my proposed criterion that well over 50 per cent of the judges would agree on the result of its application to any given set of facts. I am indebted to Martin for a constructive suggestion in connection with this drafting job: that is, that the criterion be rephrased to omit the offending "would have substituted," so that what would be required would be a showing that some (specified) nonnegligible amount of dollar revenues of one participant is accounted for by sales for which buyers *could have substituted the other participant's product*, had it been offered at the lowest cost-covering price, *without by this substitution their suffering financial disadvantage as compared with the next best remaining alternative*, had the first participant's product been withdrawn.

It is almost certain that other improvements can and should be made. The development of a generally acceptable formulation for this criterion could represent a very important advance in the clarification and effective enforcement of antitrust policy, which are essential elements in the continuing success of an economy of regulated private enterprise.

LUCILE SHEPPARD KEYES*

* The author is an economist who specializes in problems of economic regulation. She resides in Washington, D.C.

BOOK REVIEWS

General Economics; Methodology

Theory of Industrialism: Causal Analysis and Economic Plans. By JOHAN ÅKERMAN. Lund: C. W. K. Gleerup, 1960. Pp. 332. 25 SKr.

This volume is considerably more than a theory of industrialism in the usual sense; rather it represents "a modified synthesis of forty years of research" (p. 8) summarized under five main headings. First, the "Driving Forces of Industrialism" are presented, including technological progress, increase in population, changes in motivation, political change, development of credit, business agglomeration, organization of labor, and changing distribution of income. Second, "Cycles" are discussed, with seasonal, agricultural, political, industrial, and building cycles distinguished. Third, "Structural Change" is considered, in terms of structural indicators, structural limits, and structural lability, as well as in relation to cycles, growth, and innovation. Fourth, "Principles of Economic Planning" are presented, including micro-plans of consumers and producers and macro-plans for full employment and general welfare. Finally, "Causal Analysis and Plans" are analyzed, with discussions of the dualistic principle, problems of summation and causality, and the relevance of economic theory.

I have summarized the volume rather mechanically because I am not sure that I fully understand the underlying logic of Åkerman's presentation. The first section on the forces fostering industrialism, considered separately, argues that, of the eight forces involved, technological progress "is the only autonomous force in the epoch of industrialism" and that the "scientific and technical urge is mainly the result of 'idle curiosity' (Veblen)" (pp. 212, 213). Whatever its merit in Veblen's day, this approach does not seem to me to be adequate at the present time; in fact, in my opinion the rate of technological change is an important—perhaps even the most important— inherent attribute of an economic system. Because he considers it autonomous, Åkerman does not appear to consider technological change in need of explanation, so that his treatment is descriptive rather than analytical. In addition, there is little discussion at any point of the role of capital formation; it is, for example, given hardly any consideration in connection with the development of credit, as the "essential task" of the credit system is stated to be "the bridging of the gap in time, which separates the starting and the *completion* of work on new means of production" (p. 63; my italics).

The discussions of cycles and structural change raise further problems. Åkerman's conclusion is that "*The causes of economic periodicity . . . lie outside the economic sphere*" (p. 178; his italics). He reaches this result by starting with a seasonal cycle of a half-year or a year and an agricultural cycle of two years, which depend on the character of the solar system; arguing for a political cycle of four years (replacing the usual Kitchin or in-

ventory cycle), which he relates to the timing of U.S. presidential elections; and ending with an industrial (or Juglar) cycle of 8 years and a building cycle of 16 years—so that “each period except the basic short season, can be regarded as built on two of the cycles of half its length” (p. 175). The importance Åkerman attaches to the timing of our elections I find flattering, but I cannot say that I find the political cycle or so neat a geometric increase in the length of cycles particularly convincing.

Åkerman also believes that “secular movements of prices are a direct function of the alternation between war and peace” (p. 214). This in turn permits him to reach the basic over-all conclusion that “The *causal* factors of economic growth and economic variations are . . . *exogenous*—they are to be fetched from ‘outside the billiard table’: technology; the rotation of the earth; and wars” (p. 214; his italics). I believe that Åkerman’s emphasis stems from a desire to stress that industrialism involves changing relationships over a broad range. He states, for example, that “fundamental changes—development as well as all sorts of cyclical movements—are actually nothing else than structural changes” (p. 210)—by which I take it Åkerman means social change broadly conceived. But if the interrelated character of the process of change is being emphasized, then it seems inappropriate to treat technological progress, or even wars, as entirely exogenous, or to place so little stress on the economic causes of cycles.

Perhaps what has been said is unfair to Åkerman; perhaps I have concentrated too heavily on the aspects of the discussion about which I had reservations. The volume did, in fact, contain a number of interesting insights, but over-all I must admit that I did not find it particularly enlightening.

HENRY H. VILLARD

The City College of New York

L'économie du XXIème siècle. By FRANÇOIS PERROUX. Paris: Presses Universitaires de France, 1961. Pp. 598. NF 24.00.

An attentive reader of the economic literature in the English-speaking world and on the Continent cannot fail to observe an increasing degree of separation between the two. With the exception of the economists of a few smaller nations who write in our language, there is relatively little exchange of ideas between Continental economists and their counterparts in the United States or in England. And as far as there is a flow of ideas, this goes mostly in one direction: from here to Europe.

One frequently encounters statements to the effect that the counterflow of ideas is unnecessary—even undesirable—since by our standards many economic writings on the Continent are overly verbose and lack rigor. And since so much (or perhaps too much) is published in English, who can take the time to read German quasi-metaphysical expositions or French politico-economic tracts? Yet one cannot help wondering whether this is a satisfactory explanation. Perhaps we should put at least part of the blame on the inability of the vast majority of U.S. economists to read foreign languages—barely disguised by the compulsory requirements in most graduate schools

of a reading knowledge of French and German. (One has only to read some of the language examinations taken by graduate students to know that precious few will ever take a French or German journal into their hands.) Also, one can refer to the tendency towards increasing compartmentalization of the social sciences in this country, well-illustrated by the changeover from the term "political economy" to "economics," while time has not done away with the French *économie politique*.

These reflections are especially appropriate in a review of François Perroux's *L'économie du XXIème siècle*. This book covers a wide range of topics and presents an interesting and illuminating survey of various questions of interest to the Continental economist at the outset of the second half of this century. This is not to say that Perroux's book would merit unqualified praise. Although the uneven quality of the writing and frequent repetitions can be explained by the fact that the volume brings together twenty-seven papers written for various professional and nonprofessional journals over a period of ten years, one may criticize the sometimes oblique references to other authors and the cavalier treatment of several topics. Still, one cannot help admiring the broad sweep of ideas and the refreshing insights offered on a wide variety of problems.

The general theme of the contributions is the author's endeavor to reformulate received theories in view of their application in the context of dynamic change. The fire of Perroux's criticism is directed at the preoccupation of much of our economic theory with static equilibrium positions, and at generalizations concerning the balanced growth of economic structures. As regards the first issue, Perroux dispenses with the assumption of economic units being price-takers—not to build a static theory of monopolistic market-structures, but rather to emphasize the expansionary forces operating in the framework of the large firm. These include the firm's innovating and investing activity, the role of advertising in the creation of new demand, and the tendencies towards horizontal and vertical integration.

The discussion of the place of the dominating firm in a growing economy brings Perroux to the examination of power relations on the international plane. Although the United States no longer meets some of the criteria of the "dominating economy," the emergence of the European Common Market as a new power in the world economy bears out many of Perroux's conclusions. The experience of the Common Market shows for example that the "domination effect" does not refer simply to greater bargaining power, but involves significant repercussions on trade and capital flows as well. Finally, we should note the emphasis on the salient role played by international companies (poetically called *les grandes unites pluriterritoriales*) in economies dependent on industrialized nations, and also in shaping international trade flows.

Perhaps the most important part of the book is the discussion given to the "poles of development." Instead of viewing economic growth as the balanced development of various industries and regions, Perroux expounds the thesis that the growth of an economy depends on the existence of the poles that are created by a key industry and other industries related to it. The concept of the pole of development, as understood by Perroux, is broader than that of

agglomeration economies because, besides the consideration of price-cost relationships, it also encompasses induced technological change as well as noneconomic factors. Perroux maintains that economic development is greatly influenced by the creation of a "growth mentality," attributed to the emergence of a key industry. At this point we should also note that empirical research on the Continent has done much to show the realism of this conception, e.g., in connection with the discussion of the poles in the French or the Brazilian economy.

These are some of the highlights of the book this reviewer found most interesting. Other readers might emphasize different points but it is obviously impossible to do justice to the richness of ideas that characterizes this volume within the space of a short review. There is plenty of material here which can, and should, affect theoretical discussion and empirical work. And although many of these ideas need further development, this should not be a drawback but rather an inducement to future research.

BELA BALASSA

Berkeley, California

Comportement économique et structures sociales. By ANDRÉ NICOLAÏ. Paris: Presses Universitaires de France, 1960. Pp. viii, 322. NF 16.00.

In this theoretical study the relationship between economic behavior and social structures is analyzed in three parts. In the first part, the author examines the nature of systems and coherent complexes of structures; in the second, the significance of economic behavior is discussed; in the last part, the dynamic union of structures and of behavior is explained and evaluated. An interesting preface by Professor Jean Lhomme of the University of Paris introduces the author.

As the title of the essay implies, the author uses a rather broad approach. He argues that our time is no longer that of the "pure economy." Perhaps, the time of the "humane economy" is here. The problem is to understand the operation of this complex economy in the light of frequently conflicting theories. It is proposed that a new approach be found, leading not perhaps to complete agreement, but at least to a meeting ground among the different schools. Through this new approach neomarginalists, and "structuralists," Keynesians and Marxists "could speak a common language." The result would be a reassuring economic understanding.

The author cautiously points out that his essay should be regarded more as a consideration of a current problem than a new theory; not as a general statement but only as a systematic preface to such a statement. The intention is to give a provisional synthesis of the scattered contributions in the different social sciences as applied to economics. The aim is to contribute to the solution of the present paradox in which the economist finds himself.

It is emphasized that economic thought is now discredited largely because of its incapacity to solve two closely linked problems: the choice between macroeconomics and microeconomics and that between a dynamic scheme of disequilibrium and a static scheme of equilibrium. Different schools view these problems from different angles. Their incapacity to solve these two

dilemmas seems to originate in their faulty analytical approach. It is stressed that their approach is too limited and implies too narrow a conception of economics. Instead, a broader conception is advocated. The central idea is to show that economic behavior and social structures are tied to each other; the mode and the nature of different kinds of relations, of production and distribution are determined accordingly; and under the effects of changing circumstances the bond of causality links altered behavior with structural modifications.

If this conception is accepted, then economics becomes a broad field of study. It becomes the analysis of dynamic social systems that the individuals, in groups, maintain as supports of the structures; they perpetuate these structures by their conscious behavior through actual relations in connection with activity which permits them to satisfy wants by the use of scarce resources; the creation of these resources necessitates a common labor implying differentiated and complementary roles. This conception seems to be favored by a number of contemporary economists in Europe, and especially in France, who question the nature and scope of economic science.

The integration in the theoretical analysis of the "extra-economic" elements (compulsion, consideration of social and political structures, investigation of total human behavior) is defended. The argument is that if the economist declines to take these elements into account he risks rendering his discipline radically dependent on other human sciences. In general, economic phenomena are visualized as only a part of total human phenomena. Hence the necessity for a broad approach.

Economic fluctuations are regarded as signs of tension and of structural transformation. Changing circumstances transform the situation of the groups in the system. They also change the significance of many things. Thus, a new situation appears as a challenge for the groups. To it they respond through invention, through material and immaterial means, and new models of action. The behavior of adaptation helps to actuate these structural changes because the reality of these structures is based on behavior. Thus, the combination of the models of operation of the economy and models of behavior provide foundations for the dynamics of the structures and of the systems explaining transformation and dynamic evolution.

Although the author raises more questions than he answers, on the whole he succeeds in bringing significant ideas into sharp focus. Thus he achieves his modest objective. He shows an interesting insight into many aspects of the problem. A unity of thought and high level of competency are to be found throughout.

No doubt few would agree with the author completely. Some would even say, in this country, that many of the ideas are outside the field of economics. Apparently, the approach arouses more interest in European countries than in the United States. It is too early to say whether a carefully worked-out theory would really lead to the expected result. However, it is safe to say that more attention to some of the stimulating ideas of Nicolai could increase our understanding of many of the problems we face in a rapidly changing world affecting behavior, structures and systems. Possibly, we could even make a

step forward toward a more satisfactory theory of economic development.

The method of the author is commendable. It is good to see that some economists, these days, have the courage to advocate a broader analytical approach.

D. VIKOR

Memphis State University

**Price and Allocation Theory; Income and Employment Theory;
Related Empirical Studies; History of Economic Thought**

The Problem of Rising Prices. By WILLIAM FELLNER, MILTON GILBERT, BENT HANSEN, RICHARD KAHN, FRIEDRICH LUTZ, AND PIETER DE WOLFF. Washington: Organization for European Economic Co-operation, 1961. Pp. 75 and 488. \$3.75.

The first 75 pages of this book consists of a report by a committee of experts on inflation in the OEEC countries (including the United States) during the period 1953-59. The remaining 488 pages consists of country studies prepared by Wilfred Beckerman and Stephen Marris of the OEEC Secretariat.

Unfortunately detailed examination of the country studies is beyond the scope of this review and the competence of the reviewer. cursory perusal of them, however, indicates that they are a notable contribution to the economic history of the period, even though experts from the individual countries may question some points of detail. A great deal of information has been very succinctly provided.

The report is also remarkable, not so much for its originality, as for the fact that a group of economists whose political points of view are by no means identical have reached substantial agreement in an area that is highly charged with political emotion. Perhaps the degree of objectivity they have achieved is only to be expected among economists. But it is not often realized. The authors approach their problem straightforwardly, examining in succession the role of demand, the role of wages and the role of monopolistic pricing. Each section deals separately with both diagnosis and prescription.

The committee believes that excess, and not merely permissive demand was a major inflationary force during 1955-57. By this it is meant that shortages of capacity or labor in major segments of the economy contributed largely to the price increases that occurred. During this period some governments were impelled to take restrictive monetary and fiscal action not primarily to curb inflation but to protect their balances of payments. The committee concludes on the basis of this experience that fiscal and monetary measures are adequate to curb demand inflation in a reasonably short time.

Nevertheless they confess that they are far from unanimous, even in retrospect, concerning the restrictive action that should have been taken during the boom. They pin some of their hopes for the future on improved statistical information. They pin others on additional instruments of policy, particularly discretionary authority to change tax rates and to control consumer credit.

The real problems, however, may be political rather than economic. 1955

was a glorious year of peace and prosperity, not to be marred by monetary and fiscal spoil-sports whose actions might reduce profits or even increase unemployment. But that may be too cynical. The United States, at any rate learnt a lesson, and applied it with an overdose of deflation in 1960. However, it was the balance of payments rather than inflation that spurred the government to action.

The type of inflation with which the committee is mainly concerned, as a continuing problem, is the wage-price variety. While they agree that wage pressure on the price level has varied among countries, they conclude that it has been both "an important and an independent inflationary force" in the United Kingdom, the United States, the Netherlands, and the three Scandinavian countries of OEEC.

By an "independent force," the committee means that money wages under collective bargaining increase more rapidly than they would if wages were determined solely by the scarcity of labor in relation to employers' requirements. Since this point of view has been questioned, the committee presents a detailed and convincing empirical argument in support of its position. But theory seems to be enough to settle the matter. To take the extreme case, it is hard to see how agreements between monopolistic organizations of employers and employees can yield the same results as would a competitive labor market.

The committee agrees that demand influences wages directly, and also affects the course of collective bargaining. It might also have added that a permissive fiscal and monetary policy that does no more than validate the price and wage increases arrived at by collective bargaining can itself affect the future course of bargaining in an inflationary direction.

The authors, perhaps wisely, refrain from producing a theory of collective bargaining. They do not attempt an analysis of the factors that influence wage demands and employer resistance. They are content to point out that despite wide differences in institutions, ideology and bargaining practice, there can be and frequently are chronic tendencies for average wage increases to exceed average productivity increases.

With respect to remedies, the committee agrees that fiscal and monetary discipline is not an appropriate remedy for wage-price inflation. In this they may go too far. One can readily agree that prolonged unemployment is an economically inefficient and socially unacceptable remedy. But does that mean that the government must never allow output to decline and unemployment to increase as a result of inflationary wages and price increases? In its pursuit of a wages policy, should the government never issue a warning that an inflationary "wage round" will not be validated by an increase in the money supply? If it eschews the use of this weapon, its ability to control the situation may be greatly weakened.

Nevertheless the committee does reject fiscal and monetary action and is divided on what ought to be done. The majority advocates the adoption of national wage policies. By that they mean neither frantic intervention nor pallid exhortation, but proclamation of a wage norm which would carry such

moral force that the burden of justification would be thrown on those who departed from it. The idea has been in circulation for a long time, it has been widely discussed, and, as the report shows, governments have done very little about it. The main exception has been the Netherlands whose task has been the relatively easy one of so timing wage, and consequently price, increases so as to prevent the balance-of-payments surplus from growing too large. Whatever the difficulties of a wage policy for the economy as a whole, the majority is surely right in rebuking governments for permitting wage disorder in their public sectors.

The minority of the committee (Fellner and Lutz) are sceptical of general norms and believe that an effective wage policy would imply extensive regulation of individual wages and prices. Since this is an unappealing prospect, their conclusion is that "the desirable solution requires sufficiently modifying the size and the functions of the organizational units on both sides of the bargaining table." In other words, labor and management should bargain in smaller groups. This may be easier said than done. I am afraid one of the most baffling and complex problems of modern economic society remains unsolved.

The report next considers monopolistic pricing as an independent inflationary force. The committee agrees that autonomous efforts to increase profit margins can and do occur, but it argues that this is less serious than the wage push. Such efforts can provide the initial conditions for inflation, but do not produce the spiraling effect. In the committee's words "there can be a wage-price spiral but not a profit-price spiral." I am not sure that they are right from the analytic point of view. Efforts to increase the profits share of national income are likely to induce union efforts to restore the wages share at least to the old level. If business as a whole persists in trying to increase the profits share, it can produce a spiral that is very similar to that produced by labor efforts to increase the labor share. The authors are on firmer ground when they assert, as a matter of fact, that there are not "profits rounds" in the same sense as there are "wages rounds." The sanctions of competition may work better against profit-induced inflation than against wage pressures.

The remedy proposed is to strengthen the forces of competition, including foreign competition. The report also notes the possibility of consultation between government and business concerning prices, but it also notes that, while such consultation may avert price increase, it may also increase the reluctance of business to reduce prices.

Finally, and very briefly, the report considers the relation of internal price stability to international balance. It concludes that stability, while not ideal, is definitely preferable to general inflation among countries. The reason is that inflation, if it is allowed to occur, proceeds at different rates in different countries, and produces price discrepancies that have no relation to the requirements of international balance, and hence tend to disrupt it. A general regime of stable prices may also be inconsistent with international balance with fixed exchange rates. But such inconsistencies are likely to be less than those that would occur under general inflation. The committee might also

have added that if a country has the ability to achieve price stability, it is also likely to be able to achieve a controlled price increase, as was done in the Netherlands.

As an afterthought, the committee states that price stability will contribute to economic growth and, provided growth targets are not "unrealistic," growth will contribute to price stability.

One striking feature of the report is that a representative group of economists regards it as a self-evident truth that price stability should be a major objective of policy, and here they reflect a general trend in economic thinking. The case against moderate inflation is not easy to make on purely economic grounds. It probably rests on a growing conviction that a stable society cannot be based on a money illusion.

ARTHUR SMITHIES

Harvard University

Proceedings of the Conference on Consumption and Saving. Vols. I and II. Edited by IRWIN FRIEND AND ROBERT JONES. Philadelphia: Wharton School of Finance and Commerce, University of Pennsylvania, 1960. Pp. xxiv, 480; ii, 498.

These two volumes relate to the proceedings of a conference held in the spring of 1959 on the analysis of family budgets, specifically the Bureau of Labor Statistics' survey for 1950-51. The first volume is mainly concerned with the demand for individual groups of commodities, food, clothing, housing, automobiles and so on; the second with the consumption or saving function. The organizers of the conference appear to have aimed at a fairly complete coverage by commodity groups but to have left contributors to develop their analyses as they thought best without trying to get prior agreement on concepts and methods which would have led to a more fully integrated and easily comparable set of results. Despite the staggering amount of numerical calculations, many of the papers seem in the nature of progress reports, being much longer and less incisive than one would expect in a finished product. The authors vary in the extent to which they provide their papers with a beginning and an end and, although there are plenty of comments, there is very little in the way of a general appraisal either of the state of demand analysis in general or of the specific contribution of this collection of papers. The reader may well find it difficult to discover what is new in all this and to distinguish steps forward from steps backward. Accordingly, I shall try my hand at a summing up.

In the first place most of the papers represent an attempt to analyze a very voluminous but at the same time very limited set of observations and make use of modern high-speed computing equipment in doing so. This means that something can be attempted which has rarely been attempted before on a large scale, namely the detailed and simultaneous analysis of family responses to a large number of economic, demographic and environmental factors. In the past it has usually been necessary to pursue a policy of divide and conquer: assuming away the niceties of unit-consumer scales when studying the form of the Engel curve, assuming away economies of scale when study-

ing unit-consumer scales and so on. But in all these partial studies quite a lot has been learnt about which forms of relationship are likely to succeed and which are not, and this does not seem to me to be as fully reflected in the present volumes as I should have expected.

For example, considerable stress is laid on linearity and additivity. Linearity is all very well as a first approximation especially in situations where the range of variability is limited. Additivity may be necessary in general economic models where accounting constraints have to be met. But they seem to me out of place in the analysis of family budgets where the range of variation is enormous and the object is to get as close as possible to the underlying structure. Allen and Bowley could reasonably adopt linear Engel curves in their study of 1935 but they seem decidedly old hat nowadays.

Linear Engel curves carry the implication that all elasticities tend to one and log-linear Engel curves carry the implication that all elasticities are constants. We do not believe that Engel curves have these properties, so why continue to pretend they have? Perhaps the answer is that my computer does not like logistics or log-normal integrals; it likes polynomials. But the answer to that is, go away and teach your computer something useful.

It is true that by holding enough things constant, everything can be reduced to linearity. At the same time, however, we shall reduce everything to near-uniqueness and the generalizations of science will come to a full stop. For example in a paper on the demand for food, a number of log-linear regressions are carried out for different categories of race and region. It is found that whites and northern Negroes have an income elasticity of demand around one-half as against about two-thirds for southern Negroes. This is just what one would expect since southern Negroes are relatively poor. In other words the difference is probably not due to racial or regional differences but appears as a consequence of an inappropriate form of Engel curve.

In the second place, a number of techniques are represented in these volumes which seem to me very useful in exploring consumers' behavior. One of these is the analysis of variance and covariance as exemplified by the papers of Lippitt and Peters on furniture and furnishings. The point about these methods is that they enable us to get some idea of relationships in areas where we have little guidance from theory or past experience without imposing a particular form a priori. Another example is the use of two cross-section studies combined with regression and covariance methods. Houthakker and Haldi study household investment in automobiles in this way, concentrating on three determining factors: income, initial stock, and personal tastes. A third example is the development of the idea of a certain equilibrium or balance among the various items in the capital account which is taken as the basis for an interesting study of assets and claims by Watts and Tobin. They show that households tend to maintain some sort of balance in their capital accounts and that adjustments tend to eliminate rather than perpetuate deviations from the preferred portfolio pattern.

In the third place, in the discussion of saving there are signs of a tendency to accept a treatment of saving which would include the finance of net investment in consumers' durables, consumption of these goods being restricted

to the value of their depreciation. Thus Friend and Jones show that an extra \$1 on durables is associated with a diminution of 80 cents in saving. I hope this tendency persists and eventually brings about a change in national accounting practice. It takes a very ham-handed family to consume a car, washing machine or radio in the year in which it is bought, and a national balance sheet which includes business cars but not private cars is something of an oddity. For analytical purposes it seems to me that one needs two concepts: saving, the excess of disposable income over consumption; and net lending, the excess of disposable incomings, current or capital, over the absorption of commodities on either current or capital account.

Finally, Friedman's permanent income hypothesis runs as an undercurrent in many of the papers and is treated explicitly in several. It comes in for some pretty rough treatment at the hands of Bodkin in an interesting paper on windfall income and consumption. To me the hypothesis is just one of many ways of trying to account for the difference between long- and short-term responses to measured income. I hope it is not going to become a test of orthodoxy and so a great inhibitor as that other good idea, simultaneous equations estimation, was a few years ago.

To sum up, these volumes mirror the energetic attempts now being made to grapple with the detailed problems of consumers' behavior. Although the contributors are all perfectly familiar with the state of play they seem to me to show remarkably little sense of what we know and what we do not know, to build less than I should expect on the existing body of knowledge, and to put immense faith in modern computing techniques. What we want is not just another batch of coefficients but a gradual extension and refinement of knowledge, revolutionized in some aspect from time to time when a really good new idea comes along.

RICHARD STONE

Cambridge, England

Investment and Production: A Study in the Theory of the Capital-Using Enterprise. By VERNON L. SMITH. Cambridge: Harvard University Press, 1961. Pp. xi, 340. \$7.50.

From current textbooks, the student is likely to conclude that the traditional topics of production and investment in the theory of the firm are a quiet backwater, of no current theoretical interest or practical relevance. Vernon Smith's fine volume demonstrates that this conclusion is erroneous on both points. Quite apart from the recent burgeoning of linear programming and operations research, Smith shows that the classical theory of the firm is analytically exciting and of the highest relevance for actual production processes.

There is too much material in this closely-packed book for detailed summary, so I shall concentrate upon a discussion of some of the central themes unifying Smith's analysis. The most fundamental theme is Smith's attempt to provide an integrated solution for the theories of investment and production. Smith's basic, simplest production function is of the form $y = f(x_1, X_2)$, where y is flow of current output, x_1 is flow of current input, and X_2 is the

stock of durable or capital input. In this model, the basic production decision involves (for any given output) an optimal balance between x_1 and X_2 —hence, it is inseparable from the investment decision of how much of the durable input, X_2 , to acquire. Curiously, Smith is never very explicit about the assumptions underlying his basic contention here. It is certainly true, for the economy as a whole, that capital goods must be acquired by investment—but Smith's analysis is entirely on the level of the firm. Clearly, if there is a rental market, any given firm could hire the services of capital goods with no investment requirement—this would still be substantially true if there were an effective resale market for used capital goods. Nevertheless, since in point of fact such markets frequently do not exist, Smith's analysis is relevant and useful for a range of important situations.

Smith's second theme—irreversibility of production and cost functions—stems from the assumed unavailability of rental or resale markets for the durable input. His typical cost function has a declining long-run marginal curve LMC, showing increasing returns as the capital good is—hypothetically—varied over a continuum of possible scales. Once a particular scale has been selected, in Smith's analysis the "virtual" LMC curve is no longer relevant; with the given durable input, the firm is constrained to operate along a short-run curve, SMC. Now, assuming a rise in demand, there are three modes of achieving larger output: (1) for small changes, movement along SMC is optimal, (2) for intermediate changes, it is best to install a second facility parallel to the first, and (3) for very large changes, the falling LMC curve may justify discarding the original facility and investing in a much larger new one. With this basic model, Smith develops output supply functions and input demand functions for firm and industry—all being importantly influenced by the irreversibility of the underlying production function.

Another general theme—one of the most exciting aspects of the book—is Smith's attempt to relate the traditional production function to actual conditions of production. He provides many illustrations of "engineering economy" solutions to production problems, starting with Lord Kelvin's 1881 paper balancing the value of energy lost in heat against initial investment to find the optimal diameter of electrical conducting cable. Despite the brilliant individual successes of engineering economy, it is clear that traditional economics has much to offer engineers in the way of a formalized discipline of solution. But conversely, economics has much to learn as well. Smith shows that there are certain generalized classes of processes involving characteristic problems—e.g., economic balance in energy or mass transfers, optimal batch size in discrete batch production, and multiple-pass selection in regenerative processes. Furthermore, processes may be linked in series or parallel in making up the over-all production function. Smith shows how all these problems can be elegantly analyzed by appropriate use of the apparatus of economic theory.

Unfortunately, Smith's book is weaker on the investment than on the production side—in my opinion, for lack of a strong foundation in the theory of economic decision over time (as developed in classical form by Irving

Fisher). Smith tends to solve each problem with an explicit or implicit "criterion" formula, generally justified by some more or less *ad hoc* argument. This leads to vagueness or circularity when, for example, a "current profit" criterion is being employed and the question arises of "allocating" the capital cost of the durable instrument over time. For the cases Smith discusses, all that is involved is annualizing a present sum into a level flow—therefore, the respectful attention paid to certain accounting conventions about "depreciation" seems unwarranted. Oddly enough, in some cases where Smith uses a present-value criterion, he discounts back to the present the current-cost figure obtained by annualizing what was a present outlay to begin with—taking the long way around. In this connection, at one point there seems to be a definite error. In discussing "capital rationing," Smith employs a "discounted current annual profit" criterion, discounting all profits back to the present at the market rate of interest. However, the essence of capital-rationing situations is that, since borrowing ability is arbitrarily rationed, the market rate of interest is not an economically relevant alternative—some other form of analysis, such as a shadow-price marginal equivalence between current and future funds, is required to obtain the correct solution.

However, these are minor defects in a really fine contribution, the scope of which may be suggested by the following partial list of problems to which analytical solutions are provided by Smith: production and investment with indestructible capital goods; with capital goods of limited life, involving the problems of age-distribution and of optimal replacement; with capital goods that become obsolescent over time, and that decline in efficiency with cumulative use; with multistage and multifacility productive processes; and with level or fluctuating output patterns. The book is not, in general, easy reading—but it is a real advance in economic theory, essential for anyone concerned with the economics of the firm.

JACK HIRSHLEIFER

*Center for Advanced Study in the Behavioral Sciences
Stanford, California*

Theory and Application of Interindustry Analysis. By ISAMU YAMADA.
Tokyo: Kinokuniya Bookstore Co. for Institute of Economic Research,
Hitotsubashi University, 1961. Pp. 254.

As the title suggests, Professor Yamada devotes himself first to the treatment of input-output theory and then to applications of that theory in the context of the postwar Japanese economy. Given the pace of advance in interindustry analysis in recent years and the paucity of general works of the Chenery-Clark variety, the present volume, again judging by its title, augured to help fill a rather important professional need. Yamada, however, makes it abundantly clear that he is not engaged in writing an advanced text but is mainly intent on airing his own original contributions to the theory of input-output analysis. Proceeding in this vein, he makes no attempt at comprehensiveness—paying no attention for instance to the various dynamic models—and concentrates on those facets to which he hopes to make a spe-

cific contribution. The theoretical section of his book at least must thus be judged largely on the merit of these contributions.

We may partition progress in the theory of interindustry analysis roughly into advances in the so-called behavioristic and technical branches. The behavioristic theory extends the original Leontief model by introducing superior behavioristic assumptions; i.e., the introduction of each new space or time dimension has always been accomplished in this fashion. The technical theory, on the other hand, applies more to the realm of statistical estimation, the solution of the aggregation problem and comparative static prediction. In the theoretical portion (Part I) of the present volume, Chapters 1, 4 and 5 may be said to be concerned with advancing Yamada's contributions to the behavioristic theory, and Chapters 2 and 3, with the more technical side of interindustry analysis. Quite appropriately the author seems to be more concerned with the former, in which the economist qua economist should be in a position to make a maximum contribution to the advancement of knowledge.

Yamada's major original suggestion on this score is contained in his attempt (Ch. 5) to partially "close" the system by treating the consumption component of final demand as an endogenous variable. The introduction of a new behavioristic assumption in the form of a consumption function is of major importance in evaluating the economic significance of Yamada's contribution. Unfortunately, however, the function he has chosen seems to be more the fortuitous result of his mathematical manipulations than in correspondence with, at least this reviewer's, economic intuition. Consumption is viewed as a fixed fraction of the export surplus, i.e., exports minus imports, of a *particular* commodity; one might well question the validity of any theory built on such an assumption—even when the factor of proportionality is called a propensity to consume and asserted to be of pure Keynesian stock (p. 79).

Elsewhere in the theoretical sections as well, one has the uncomfortable feeling that Yamada may have let himself be guided somewhat more than is prudent by mathematical symbols rather than economic reasoning. In Chapter 1, for example, he sets out to solve not only the traditional allocation problem and its dual, relating to relative prices, but also—and simultaneously—the problems of employment and of the absolute level of prices. As is well known, traditional input-output theory permits us to determine relative output ratios in the real system and relative prices in the dual system—but Yamada further promises the determination of the level of employment in the former and of the price level in the latter. A theory of employment and of inflation built into the model at the relatively low cost of adding two equations (his consumption function and his supply function) would indeed constitute quite a remarkable achievement. Unfortunately, however, en route one has to accept a consumption function which is quite independent of national income and a theory of price-level determination which makes use of neither the quantity theory, nor liquidity preference nor institutional factors in factor or product markets. With key behavioristic assumptions strikingly unconvincing, one is forced to conclude that his system is fully determined only in the mathematical sense.

Even more difficult to digest is the fact that primary factor costs seem to be endogenously determined in Yamada's model. In traditional input-output theory such costs are given (as labor coefficients) and reflect a particular state of technology. Yamada's model, on the other hand, seems to indicate that primary factor costs fluctuate as the demand for goods fluctuates; in other words a change in consumer preference leads to a change in technology!

With respect to the technological theory of interindustry analysis, Yamada's aims are somewhat more modest and his results consequently less controversial. Chapter 2 for example, contains a conventional and correct discussion of the aggregation problem, and Chapter 3, an unconventional discussion concerned with "the interchange between an endogenous sector and an exogenous sector," also correct, but little more than a rather trivial contribution to computation procedures.

The bulk of Part II concerned with interindustry applications is devoted to fitting Japanese input-output data, compiled by the Japanese Planning Agency and the Ministry of International Trade and Industry for the years 1951, 1953, and 1955, into so-called Euler graphs or balanced tables. By demonstrating the "rightness" of his equations via the derivation of balanced square tables from input-output data, Yamada seems to expect somehow to validate his prior theoretical approach. But it is difficult to find much beyond the neat processing of data in these relatively descriptive sections—no analytical observations, for example, about the "economic circulatory" structure of the economy, and no attempt to achieve a linkage with the behavioristic data postulated earlier. When innovations are advanced, as with the introduction of "distribution coefficients" (measuring the portion of total output allocated for various uses) their significance is not demonstrated. This reviewer once again had the feeling that mathematical symmetry rather than economic logic prompted the similarity of treatment accorded to these (unstable) "distribution coefficients" and the (stable) cost coefficients.

Yamada's final chapter on economic planning starts promisingly enough by introducing a conceptual framework involving "predictable variables," i.e., exogenous and reasonably predictable on extra-model grounds; "planning variables," i.e., instrument variables controlled by planning authorities; and "endogenous variables." However, this machinery is never utilized but is followed by observations of a largely unrelated character. One cannot escape the impression once again that Yamada's considerable talents for presenting, in terse straight-forward fashion, a tightly-knit mathematical framework have not been put to optimal use.

GUSTAV RANIS

Yale University

Ciclo economico e politica anti-ciclica. By VITTORIO MARRAMA. Naples: Giannini Publishers, 1961. Pp. 386.

This lucid and attractive survey of modern business cycle theory and policies, based on courses offered by the author in the University of Naples, Italy, can be commended as a model of classroom technique. The material

is well organized, its various parts are held together by a clearly recognizable thread, and its implied emphasis is on the way in which different theories complement each other, rather than on controversy. The level of the discussion is analytical, yet accessible to the nonmathematical reader, and is happily blended with factual references and statistical illustrations.

After a few introductory chapters, which furnish also a framework for the entire treatment, the narrative proceeds with its main task—a presentation and critical review of the major doctrines at the center of the contemporary stage. By natural and largely chronological steps, it unfolds the cobweb theorem, some of the findings of the National Bureau economists, the inventory cycle, a number of basic econometric models, and, in particular, the essentials of *The General Theory* and of later theories which make use of the multiplier, of the accelerator or of a combination of the two. A later group of chapters deals with economic policies, and discusses the potentialities and limitations of built-in stabilizers and of what Marrama calls “discretionary stabilizers,” such as income redistribution, the management of interest rates and compensatory financing. This is followed by an examination of the conditions for equilibrium at full employment, and related problems of excess-demand and wage-push inflationary pressures, and by a review of international stabilization methods, such as buffer stocks, commodity agreements, International Monetary Fund policies, and so forth. The concluding chapters revert to the consideration of theoretical models, in particular those which combine cyclical with long-term trend determinants.

An important feature of the author's treatment is the introduction of a diagrammatic presentation, in the form of a flow chart, depicting the mutual dependence and interaction of the main flows of the national economic accounts. There is a major flow, of rectangular shape, the left side of which represents the GNP while its right side reflects the sum of its component parts: consumer expenditure plus gross investment plus the foreign balance = total expenditure = GNP. In turn total expenditure is linked, both ways (that is, in and out) to three subsidiary flows, reflecting the behavior of the government account (revenue and expenditure), of the private capital account (gross saving and investment) and of the foreign payments account. Furthermore, the government account and the private capital account are linked both ways to the flow of credit made available by the banking system, and the foreign payments account to the flow of outside financial facilities available to the domestic system.

One of the main purposes of the chart is to emphasize the role of private capital investment on the general level of economic activity, and to underline Marrama's conclusion that the rate of net private investment is the main determinant of the business cycle. But this particular interpretation stems in fact from certain drastically simplified assumptions which have nothing to do with the chart, that is that all other determinants are likely to be constant. Consumer demand is assumed to be a stable function of the pattern of income distribution, the charges for maintenance and amortization are held to be unchanged from year to year, monetary policy is assumed to be of the neutral type and the government budget is supposed to be in balance. These assump-

tions are of course open to challenge, but since they are clearly stated the reader has been warned, and can draw his own inferences as to their plausibility.

Another significant section of the book deals with the international propagation of the business cycle. It makes use of the multiplier, the J. J. Polak's "international reflection ratio," but mainly of an approach developed a few years ago by Marrama, focusing upon the degree to which "peripheral" areas of the international economy, either industrialized or producers of primary materials and commodities, are dependent on trade among themselves and in particular on trade with the United States, which is viewed as the center of the world economy. By combining various criteria, such as the ratio of exports to national income, the income elasticity of the demand for exports and the export structure by major commodities and destination, one can assign to each "peripheral" country a numerical coefficient, reflecting its vulnerability to changes originating from the outside, and in particular from "the center." The results are of interest, though of late the structure of the world economy has become increasingly bi-polar, owing to the renewed strength of Western Europe and Japan.

From his vantage point, the author calls attention, by way of statistical illustrations, to interesting features of the contemporary evolution of the Italian economy, including the building cycle, short-term postwar waves of expansion and correction, changes in consumer demand brought about by the income effect which is operative in an expanding economy, and structural changes in the balance of payments. Of equal interest are references to the role of Marco Fanno as one of the architects of the acceleration theory, and to the contribution made to business cycle literature by other contemporary Italian scholars, such as di Fenizio, Demaria, Papi and Vito, as well as by younger economists such as Brambilla, Graziani, Jr., Mazzocchi, Talamona and others. The author's own contributions, traceable in part to earlier work, are hidden in the running commentary in a refreshingly unobtrusive fashion.

BRUNO FOA

New York, N.Y.

Il profitto nella teoria economica contemporanea. By FRANCESCA DUCHINI.
Milan: A. Giuffrè, 1960. Pp. 236. L. 1.200.

It is a minor oddity that profit, the Golden Fleece of most economic ventures in Western industrial society, remains withal a term with no unique meaning. Neither its size nor causes nor consequences can be clearly discerned, let alone measured. On one showing it is the result of economic progress, but on another it is its mainspring. One respectable opinion has it that profit arises mainly from the happenstance of events in a planless society; per contra it is depicted by others as a rough measure of planned scarcity, an index of the subordination of public benefit to private advantage. It is begotten by waiting, or it comes from plunging ahead. In the instrumental sense it is entirely subjective, and yet it is closely computed and then taxed.

Of hypotheses, models, and conjectures concerning profit there is truly no dearth, and this helpful book affords synopses of a great number of them.

Mainly, signorina Duchini's intention was to sketch developments in, or perhaps more accurately, ramifications of, various profit theories from about the close of what Schumpeter called the "classical period," circa 1914, to the present. At the outset, however, she has compressed into less than a hundred pages practically the whole of earlier profit theory from the times of the founding fathers of economic science. This part of the book will prove highly valuable to people interested in the history of economic ideas, for no such compendium of profit theory has been published, to my knowledge, in this century. One is reminded in a way of *Capital and Interest* although Böhm-Bawerk's masterly criticisms of earlier exponents of his chosen subject are not paralleled in the present work, which is for the most part strictly expository.

The author then surveys a large number of fairly recent and variously noteworthy writings relating to profit that have appeared during and subsequent to the interwar years. It turns out that they have nearly all been in some sense macroeconomic; not much time is spent any more in bootless speculations concerning either the ethical or psychological aspects of profit. The author well says (pp. 226-27) that these are matters best referred to other disciplines.

The book makes special note of theories wherein profit is a strategic factor in economic growth. For obvious reasons Schumpeter is awarded a prominent place; indeed, it is the author's estimate that most (but not all) modern models are derivative in some degree from the work of either Schumpeter or Knight. The contributions of Kaldor, Kalecki, Duesenberry, and other European and U.S. writers too numerous to mention here have been sifted for common elements, of which there are, apparently, few enough. At any rate signorina Duchini has not felt justified in hazarding a guess as to the direction being taken by profit theory. While it is clear enough that contemporary writers agree that profit is endo-originating, exclusively dynamic in origin, and merely one of a number of mutually dependent phenomena, there is little uniformity of opinion beyond this, and no one line of inquiry now seems more promising than any other. The root reason for this is the opacity of the term itself.

The book manifests solid scholarship and good planning. The index is very thorough. In English the book would be a minor boon.

A. STUART HALL

University of Nebraska

Ekonomicheskie zakony sotsializma i ikh ispol'zovanie. (Economic Laws of Socialism and their Utilization.) Edited by I. A. ERMAKOV. Moscow: Sotsekgiz, 1960. Pp. 426.

Among the more dubious elements of Stalin's doctrinal legacy must surely be counted the "objective economic laws of socialism." First imposed by the dictator on Soviet economics in early 1941, they formed the central theme of his well-known last theoretical work, *Economic Problems of Socialism in the USSR* (1952), and, unlike some other parts of his doctrinal edifice, were retained bodily and even somewhat elaborated in the years following his

death. Loosely constructed, ambiguously formulated, vaguely delimited, and declaratively posited, they have been a heavy drag on the development of Soviet economics in the post-Stalin period, and especially on the recent attempts to channel it toward a more operational and rational discipline. On the other hand, they have given ample excuse for the sort of wordy, monotonous, repetitive, and vacuous regurgitation that perennially fills thousands of pages in Soviet economic journals and books and is all too familiar to their readers.

Altogether some eight "economic laws of socialism" have come to light; e.g., the "law of planful, proportional development," the "law of steady growth of labor productivity," the "law of socialist accumulation," and the "law of preferential growth of the means of production." (Concerning the last, see the trenchant criticism of Alexander Gerschenkron, this *Review*, September 1959, pp. 734-37). Stalin called them "objective" because he saw them operating outside the will of man—in this regard he distinguished them from juridical laws—and asserted that a socialist society (i.e., the Soviet) must take them into account for policy and planning and can violate them only at its peril. We may surmise that he had a double purpose in enunciating the concept of objective law: to restrain the more impatient of the builders of socialism, and at the same time to legitimize his own policies in the eyes of the faithful.

In point of fact both the adjective "objective" and the contrast with juridical laws are questionable. With the special exception of the "law of value," on which more in a moment, the "laws" are not statistical or historical generalizations, whether empirical or hypothetical. Rather, they are—not unlike juridical laws—prescriptive, imperative, and enjoining, with a large dose of the admonitory and educative thrown in. They represent certain desiderata and goals (high rate of growth, rising standards of living) and certain means to their attainment (planning, balanced development, material incentives, high rate of investment). As such they are anything but divorced from the will of man, or, at any rate, from the will of the Man on Top. If they express "necessities"—which is what economic laws represent in the usual Soviet conception—then they are the necessities stemming from a certain definite (and quite subjective) set of values and preferences. Lastly, as operational guides to the planners they are worthless.

The "law of value," one of the eight, is in a somewhat different category because it is at least Marx's own creation, and was meant by him to be a social law in the usual sense of an empirical generalization. Although even in its own day not the last word in value theory, it sought to represent the regularities of price formation in a capitalist market economy under certain restrictive assumptions (pure competition, constant costs, etc.). Its revival in the Soviet context, where capitalism and the market mechanism have been deliberately abolished and prices are decreed, raises many difficult questions. And indeed, its normative application (but not its applicability!) under Soviet conditions has been the subject of a very lively and extensive debate among Soviet economists in the past six years.

The book under review is, in most respects, a rather routine contribution

to the on-going Soviet bibliography on the "economic laws of socialism." Apart from the editor's introduction, there are thirteen contributions. Each is devoted to a single "law," though several "laws" rate more than one essay. The contributors are generally little known to western sovietologists. The volume, sponsored by the Social Science Administration of the Ministry of Higher Education, seems to be intended for student use. The preface suggests that the book may fill a certain gap in the Soviet literature. In so far as theory is concerned, this is rather doubtful, since it offers little beyond what can be found in the official and (in post-Stalin terms) orthodox *Textbook of Political Economy* (successive Russian editions since 1954; also translations into major foreign languages). The philosophically and epistemologically orthodox tone of Ermakov's book is set in the first paragraph of the Introduction (p. 3, my italics): "Penetration into the *essence (sushchnost')* of economic phenomena and processes amounts to cognition of the economic laws of development of social production." It is, among other things, the search for the *essence* of economic value and economic laws, rather than their use and utility, that has led Soviet economics into its blind alley and has kept it there largely until now.

Nonetheless the specialists will not find the volume entirely devoid of interest. Some of the less theoretical contributions are quite informative, factually and analytically. Thus, Ofmanis ("The Law of Value and Business-like Management [*Khozraschet*]," pp. 218-49) gives a good deal of data on widely varying rates of profit and loss among Latvian enterprises and on what happens under such conditions. Khudokormov ("The Utilization of Economic Laws in the Marketing of Kolkhoz Output," pp. 281-319) does a similar job with regard to collective farms. Kapustin ("The Economic Law of Distribution According to Labor . . .," pp. 320-57) summarizes the current wage reform. Finally, Osad'ko ("Distribution According to Labor in Kolkhozy . . .," pp. 358-93) is also informative, and incidentally shows in effect that much of this distribution has *hardly* been "according to labor."

GREGORY GROSSMAN

University of California, Berkeley

Bestimmungsgründe des persönlichen Sparens—Ein Beitrag zur ökonomischen Verhaltensforschung. By WERNER PASCHKE. Berlin: Duncker and Humblot, 1961. Pp. 223. DM 28.60.

After a 25-page history of doctrine on savings, the author sets out to do four distinct things. First, he offers a sociological investigation of savings motivation. Riesman's three society types, the tradition-directed, the inner-directed, and the other-directed society types, are applied to the saver in a rather convincing way. Veblen, Duesenberry, and Modigliani-Brumberg are also reported on, and the author seems impressed (p. 46) by the extent to which quantitative economic theory, sociology, and psychology mutually influence one another in the United States!

Second, traditional economic theory of optimization by the household is summarized. In his attempt to apply Hicksian indifference analysis to the case of consumption (plotted horizontally) versus saving (plotted vertically),

the author manhandles the indifference map badly by saying that the locus of all tangency points with shifting budget lines "corresponds" to the 45° line used in Keynesian diagrams of the consumption function! Fisher's ingenious graphical technique (*The Theory of Interest*, Ch. 10, 11), specifically designed for the author's problem, is overlooked. In his criticism of the neo-classical theory of the household, the author reveals several misunderstandings: He misses the distinction between cardinal and ordinal utility, and categorically rejects the idea that the consumer is a consumer *only*, thus overlooking the ease with which Walras, for example, simultaneously determined an individual's demand for consumers' goods and his supply of productive services. Walras simply made the individual's utility a function of the quantities of consumers' goods purchased *and* of the quantities of productive services retained for his own use as leisure, garden plot, etc.

Third, the author makes his own suggestion, i.e. to adopt a radically new approach to the theory of saving. The household always faces a conflict between itself as a saver and itself as a consumer. This conflict is best seen, understood, and resolved, the author insists, as a zero-sum, two-person game in which the saver plays against the consumer. Zero-sum, the author explains on p. 115n., because a given income is assumed. Hence a "gain" for consumption is *eo ipso* a "loss" for saving. (This assumption throws us right back into the bad company of those neoclassicists, so severely borne down upon, who thought of the consumer as a consumer *only*, or is the reviewer mistaken?) Later, the two-person game is replaced by a three-person game with the saver, the hoarder, and the consumer as players, even forming coalitions. Some fancy game-theoretical nomenclature is reproduced here but never used really to specify, let alone solve, just one such split-personality game. If Paschke's suggestion to use the theory of games in the theory of savings is a fruitful one, he has yet to show it.

Fourth, the author turns to statistical observations. "Savings" here is measured as gross deposits in savings banks (*Sparkassen*), a rather arbitrary measure, and the author confines himself to an examination of the rate of interest-savings relationship and the income-savings relationship. Lack of data prevents testing of other relationships. No regressions are used, merely time charts and budget studies.*

HANS BREMS

University of Illinois

*The reader of the present review may be interested in alternative German work on the same subject and is referred to Gerhard Gehrig, *Bestimmungsfaktoren des Konsums in der Bundesrepublik* (Berlin and Munich: Duncker and Humblot, 1958). As for corporate saving, no part of the subject of the present work, the reader is referred to Walther G. Hoffmann, "Die unverteilten Gewinne der Kapitalgesellschaften in Deutschland 1871-1957," *Zeitschrift für die gesamte Staatswissenschaft* 1959, 115 (2), 271-91.

De prijsvorming van consumptiegoederen op oligopolistische markten. By A. HEERTJE. *Capita Selecta der Economie XXII*. Leiden: H. E. Stenfert Kroese N.V., 1960. Pp. viii, 111. f 12.

The main purpose of this concise book is to develop an integrated theoretical model of the process of price formation in the case of consumption goods,

assuming imperfect competition on the supply side and perfect competition on the demand side.

The originality of the approach lies in the successful integration which appears to have been achieved by Heertje between the theory of consumer behavior and the theory of imperfect competition. The behavior of firms, acting mainly as price and quantity adjusters, is analyzed for both oligopolistic and monopolistic conditions. One of the real merits of this work is that the theoretical model itself is formulated in such a way that it could be tested empirically and conceivably be given operational significance.

The first chapter is devoted to the formal and rigorous presentation of the theory of consumer behavior. The collective demand curve for any given good is derived through an aggregation process from the individual demand curves on the usual assumptions that the preference scales of the individual consumers are given in terms of ordinal utility functions and are mutually independent. The collective demand for any given commodity is expressed on a per-consumer basis and is shown to be a linear function of real per capita income and all relative prices.

In Chapter 2 the model is formally developed. The first step consists of trying to relate the producer's sales function (the firm's demand curve) to the collective demand curve for the same good. Whereas the collective demand curve depends on all relative prices, the firm in its sales function will only react to a limited number of price relationships. More specifically the entrepreneur under imperfect competition is said to react only to changes in the prices of the commodities which compete directly with his own output. These are the strategic prices as opposed to the prices of all other goods—the nonstrategic prices—which may affect the demand curve faced by the firm but which are ignored in the firm's decision-making process. From the standpoint of a firm producing good i , the quantity sold is a function of all strategic prices—including of course, the price of i —the level of real income, and a term reflecting the influence of the nonstrategic prices (which are assumed constant).

A reciprocal relationship is assumed to exist as between strategic prices, i.e., if the price of B's product is strategic to A, then the price of A's product is also strategic to B. The firm's demand function thus includes, as independent variables, elements representing both the presence of competing suppliers, through the coefficients of the strategic prices, and the strength of aggregate consumer demand, which is reflected by the constant term indicating the impact of the nonstrategic prices and real income. A market is defined as the cluster of firms which contains the same set of strategic prices; and price formation in this market can be explained in terms of the n sales functions which contain as explicit variables the n strategic prices. Each market is, as it were, a partial equilibrium model which is, however, related to the general equilibrium model through the nonstrategic prices appearing as an implicit variable in each sales function, and through real income.

A formal (mathematical) treatment of the behavior of the firm as a price and quantity adjuster and of the equilibrium conditions in each market completes Chapter 2.

The third chapter is devoted to monopoly theory. A monopoly is defined

as a market structure in which the sales function of the firm contains only one strategic price—the firm's own price—all other prices being considered nonstrategic. Advertisement can be used by the monopolist to affect the coefficient relating his total sales to real income; it can thus lead to a shift of his sales curve.

The final chapter dealing with oligopoly theory contains, together with Chapter 2, the crux of Heertje's contribution. Oligopoly is considered to be the most important market structure and is taken as the general case. Monopoly and pure competition are shown to be in fact special cases of oligopoly. An oligopoly is formed by the set of suppliers which take either the price or quantity variations of one another as strategic action parameters. Since reciprocity is assumed, the market structure can be fully identified in theory. The main difficulty in the treatment of oligopoly is in expressing the form which the reaction of suppliers will take in response to the action of one of them. Heertje assumes that the oligopolist's reaction function is predetermined by the underlying power structure which prevails in the market. The power structure itself depends on a number of factors—many of which are more psychological than economic in nature. Heertje assumes that each firm in the oligopoly strives to obtain a certain share of the market's total profits depending on its power position. Given this share, the author makes use of game theory to show the strategy (price) which will maximize the total profits of this individual firm. In so doing, Heertje rejects Fellner's assumption that oligopolists behave in such a way as to maximize profits for the industry as a whole and Baumol's more recent assumption that oligopolists strive to maximize total sales subject to a minimum profit margin. With the help of an oligopoly example giving the pay-off matrices for each supplier—assuming a nonzero sum game—Heertje derives the reaction function which will maximize the firm's profits.

In this model as in any other model of imperfect competition determinacy is only achieved when a number of essentially *a priori* behavioral assumptions are made.

The validity and realism of the following assumptions can be debated: (1) unitary income elasticity of demand (straight-line Engel curves) and more generally linearity assumptions throughout the model; (2) the reciprocal nature of strategic prices, and (3) the exclusion (noninclusion) of non-price variations as explicit action parameters of the firm (the impact of advertisement is discussed briefly but does not enter as an explicit variable in the sales function).

This work is an important contribution to oligopoly theory. Not only does it provide a concise synthesis of the Anglo-Saxon and continental European literature (particularly the Dutch literature) but, more important, it provides an internally consistent and elegant model within which the price formation of consumption goods can be explained under oligopolistic conditions. This book deserves a much wider audience than the necessarily limited set of readers at home with the Dutch language. Translation might be recommended.

ERIK THORBECKE

Iowa State University, Ames

The Workability of Input-Output Analysis. By MICHIO HATANAKA. Ludwigshafen am Rhein: Fachverlag für Wirtschaftstheorie und Ökonometrie, 1960. Pp. xxii, 310.

This is an able and imaginative econometric study, and a worthwhile addition to input-output literature. It is devoted largely to testing the static open input-output model, with production coefficients derived from an aggregated version of the 1947 U.S. table prepared by the Bureau of Labor Statistics. But there is such scrupulous consideration of the design of the tests and of the interpretation of results that the author's extensive discussion of these matters alone will reward readers with an interest in the complexities and often unstated assumptions behind the use of data in economic models.

Hatanaka tests the following hypotheses: (1) that the constant coefficient model is "workable" in the short run (1 to 3 years) and in the long run (7 to 10 years), in terms of comparative predictive power; (2) that variations in the coefficients over time are random, in 13 and 21 year periods; (3) that the coefficients show trends in the period 1929-1950; (4) that war conditions such as those of 1941-1945 do not disturb the coefficients so greatly as to invalidate the use of input-output analysis for mobilization purposes; (5) that changes in the relative prices of inputs can account for substitution among them (of energy sources, in the specific tests); (6) that input functions should include a fixed flow independent of output, in addition to a flow proportionate to output.

With respect to hypotheses (2) to (6), the author concludes that time variations in coefficients are not random; that the changes are in fact trends in at least some industries; that the coefficients in 1941-1945 diverged so greatly from those of 1947 as to make doubtful the usefulness of the constant-coefficient model for mobilization planning; that there is some inconclusive indication of price-induced substitution of energy inputs; and that the prediction errors are not explained by inclusion of a constant-flow term in each production function.

Since the only coefficient estimates available to the author were those for 1947, he designed indirect tests of his hypotheses as to their changes, in terms of movements in the residuals or error terms in the input-output prediction equations. Such tests require only estimates of each industry's total output and flow to final demand, in constant (1947) prices. For any industry in any year, the difference between its observed output and its observed flow to final demand is its observed production for intermediate use, and the discrepancy between this last figure and the value for it predicted by the input-output model is the above-mentioned residual. In their recent study, Arrow and Hoffenberg have also taken the movement in this residual as their measure of change in an industry's input-output coefficients.¹ Their independent and much more elaborate investigation of coefficient trends overlaps this part of Hatanaka's work. They too found distinct evidence of trends, although their complex models explained these with only limited success.

¹K. J. Arrow and M. Hoffenberg, *A Time Series Analysis of Interindustry Demands*. Amsterdam 1959.

Hatanaka's account of his tests of input-output as a predictive device, occupying more than half the volume, will probably be the subject of greatest interest to most readers. The objective has shown itself to have a certain elusiveness, the nature of which is embodied in two questions. First, what particular formulation stands for "the" input-output theory, so that statistical rejection of the model would signify disproof of the theory? Second, what criterion should be used for acceptance or rejection of even one model? The inability of input-output advocates and critics to come to agreement on the range of answers to the first question underlay much of the strong feeling that characterized earlier debate on the subject. On this point Hatanaka holds the broad view (p. 83): "The hypothesis of the input-output model states that out of all the possible models derived from different model-building specifications there exists at least one input-output model such that the errors in this model are acceptable for the purpose of input-output research. . . . We must continue to test various models obtained from different model-building specifications until we either find a satisfactory model or exhaust them all[,] concluding that none of the models has an acceptable level of error."

Since the fixed-coefficient model is the only one tested in the present volume, the more relevant question here is that of the specific test criteria. The general position of input-output proponents is that probability measures of significance are inappropriate. Since estimates of future output levels will be undertaken in any case, the effectiveness of input-output technique should be judged by its comparative performance in competition with less elaborate alternative models.

This comparison method is the basis of Hatanaka's tests, referred to as hypothesis (1) in the second paragraph of this review. In his terminology, an input-output model is proved "workable" if its errors of prediction for a given set of test observations are less or no greater than those of an alternative model. His comparison tests are the most extensive undertaken so far, and the first to be published using the elaborately prepared 1947 coefficients. They measure the aggregate errors in industry output predictions, pairing input-output against each of the following "global" models: (1) final demand projection (a constant 1947-base ratio of each industry's output to its production for final demand); (2) time series regression of each industry's output on final demand, with coefficients estimated from the period 1929-1940 (plus 1946-1947, for the short run); (3) time series regression of each industry's output on GNP, with coefficients estimated from 1929-1940 (plus 1946-1948, for the short run); (4) indirect demand projection (a constant 1947-base ratio of each industry's output to total production for intermediate demand by all industries).

In each case, comparisons are made for short-run and long-run periods. And for almost every comparison series, tests of three types are run, in terms of total or weighted average errors. Technical reasons and insufficient data led to omission of some industries from the tests. Since this gave a very heavy weight to agriculture, which yielded an especially poor input-output prediction for 1950, the author presents some comparisons both excluding and including agriculture. The tables of test results as a whole are favorable to the

input-output method, but with sufficient qualification to warrant a summary:

1. Input-output is clearly superior to final demand projection in the short run by every test. In the long run, it is also superior, except in two of the three tests including agriculture.

2. Input-output is superior to regression on final demand in the short run for all 1949 tests and for 1950 excluding agriculture. The long-run tests are inconclusive, with input-output superior in some tests and inferior in others. One set of long-run tests shows input-output to have marked superiority for the class of industries with the largest fraction of output going to intermediate demand, a result in keeping with the input-output rationale.

3. Input-output is superior to regression on GNP in the short run, except in two of the 1950 tests including agriculture. Its advantage is especially great, even when agriculture is included, for the 10 industries with 80 per cent or more of their output going to intermediate demand. The long-run results are mixed. Here again input-output is far superior for the class of industries with high percentages of output going to intermediate demand.

The long-run comparisons of input-output with the two regression models are rendered uncertain by the fact that lack of data beyond 1950 necessitated the use of different test periods for the competing methods: input-output predicted backward from 1947 to the individual years 1937-1940, and the regression models used 1929-1940 data to predict outputs for the years 1949-1950. Hatanaka offers evidence to support his belief that input-output errors—and therefore the test results—would have been about the same had 1940 coefficients been available for predicting 1947-1950 outputs.

4. In virtually every test, input-output is inferior to a model using constant 1947-base ratios of individual industry output to the aggregate intermediate outflow from all industries. But why Hatanaka presents this alternative "model" as a possible predictive device is a puzzle. What would be the source of estimation of the necessary predictor—the future annual aggregate production for intermediate use by all industries?

In addition to the contents so far described, the author presents a 54-page account of the meaning and criticisms of the static open fixed-coefficient model which a reader should find moderately clear and adequate. There is also an excellent 20-page summary of earlier empirical tests. The extensive discussion of how observation errors can affect the meaningfulness of econometric applications is an important contribution and reminder, as Morgenstern emphasizes in his enthusiastic foreword.

Though generally cautious, Hatanaka is too optimistic about the degree of accuracy assured in input-output tables by the process of cross-checking and balancing. He writes (p. 104), "In the 1947 tables the column sum and row sum are equal for each industry and sector. However, this does *not* mean that the observation errors were eliminated either from the column and row sums or from each entry. It *does* mean that these observation errors probably are not overly significant." Economists who have worked directly in the construction of input-output tables know that this conclusion does not follow simply from the equality of row and column totals for each industry.

Mathematical symbols and equations are plentiful in the volume, but the

author generally follows the admirable practice of stating his propositions verbally as well. Occasionally the language is awkward and unclear, and sometimes it is misleading to the point of error. For example, the symbol $\varepsilon_i(t)$ is defined verbally as "the global measures of the changes in input coefficients" over time (p. 98), and is repeatedly so referred to, though in fact it includes in addition all the consequences of observation errors, the separate existence of which Hatanaka has taken such pains to distinguish. It must be added that he never commits this error in his formal development or applications. On the whole, this is an excellent book, in purpose and achievement.

AMOR GOSFIELD

University of Pennsylvania

Consommation et épargne. By JEAN-CLAUDE EICHER. Paris: Sirey, 1961. Pp. vii, 165. NF 15.00.

Professor Eicher's book is one of a series of studies in economic research concerned with such topics as the power of monopoly, business cycles and money, and fiscal systems and the common market, which have been subsidized by the French Ministry of Education. It starts with a presentation of the Keynesian consumption function in a style reminiscent of the better U.S. textbooks. Then follows a discussion of the standard post-Keynesian literature including most of the important contributions, with particular emphasis on the Duesenberry formulation. Eicher is very critical of the simple Keynesian function, and more favorably disposed toward Duesenberry's.

However, the major emphasis is placed on Milton Friedman's permanent income hypothesis. Characteristically like many of Friedman's students, which Eicher was, he accepts the Friedman hypothesis enthusiastically; in fact makes it his own by conviction, and devotes a major part of the work to explaining the Friedman theory, often paraphrasing the reasoning contained in *A Theory of the Consumption Function*. This presentation is especially important in making available a major U.S. contribution to French-speaking economists.

The third, and most interesting part for those already familiar with Friedman's classic, is concerned with statistical verification of his hypothesis. Although part is taken over from Friedman, Eicher does present some new materials. For example, he cites a time series of consumption expenditures and disposable incomes of a small German sample of salaried families consisting of four persons close to the average income of all salaried families. Their incomes increased regularly from 1950 to 1958. Since, by hypothesis, no transitory factors were present, the consumption function fitted to the data almost goes through the origin and the coefficient of correlation is close to 1.

Turning to aggregates, Eicher calculates the marginal propensity to consume from official U.S. national income data for the period 1929 to 1955, and finds that the marginal propensity to consume is higher than for the subperiods 1929-1941, and 1930-1949. If the abnormal periods 1931-1935 and 1942-45 are excluded, the long-term propensity is even larger. So far,

this is in accord with Friedman. However, the propensity for 1929-1941 is larger than for 1930-49, which Eicher finds difficult to reconcile because the latter is a longer period. He claims that the difference is due to the inclusion of consumer durable expenditures rather than depreciation as in the case of the Goldsmith data originally cited by Friedman. Perhaps a different explanation is possible, since during the Second World War, the consumption function was clearly depressed. The inclusion of these years lowers the marginal propensity for the 1930-1949 period.

Consumption expenditures and disposable income (including gifts) are then compared for twelve countries for the period 1950-1955. Eicher finds that for only four countries the average and marginal propensities are similar, thus conforming to the Friedman hypothesis. In two countries, Australia and New Zealand, special circumstances such as unusually large liquid assets and rapid price and income advances can explain the discrepancy. The other countries seem to conform more closely to the Keynesian hypothesis since the marginal propensities are clearly lower than the average. However, with the exception of Holland, a longer period, 1950-1958, helps to bring the two propensities closer together.

Budget studies from six countries are cited which show a typical flattening out of consumption as income rises. Eicher's explanations are somewhat tortuous, in claiming they do not contradict the Friedman theory. For example, he argues that permanently low-income families are not likely to respond to surveys and if they do, they would not declare income from charity and relief. They are frequently omitted by survey design, and low-income families that are interviewed are those whose incomes are temporarily depressed. On the other hand, high-income families who are permanently at the top do not respond to surveys, while those who do are temporarily well situated and still cling to older habits.

Since Eicher offers no criticism of the Friedman theory, he acts perhaps like a lawyer for the defense. This reviewer remains unconvinced, since at least for him the U.S. aggregates in the postwar period still conform to the post-Keynesian notions, particularly if due cognizance is taken of the major rise in saving by private pension funds. Nevertheless, this book is an important contribution by one of France's younger and promising economists.

MORRIS COHEN

St. John's University

Intermediate Economic Theory. By GEORGE MALANOS. Philadelphia: J. B. Lippincott Co., 1962. Pp. xiii, 540. \$6.50.

To paraphrase the author, this book is intended to meet the needs of students in the upper-division undergraduate curriculum who are studying price theory, microeconomics, or general economic analysis. It is in terms of this objective, then, that the book should be evaluated. Although the author states strongly that the discussion is kept free of mathematical proofs and arguments, the student would find it helpful to have more than a passing familiarity with mathematics. Numerous proofs are presented with a heavy reliance on geometry.

As to its structural features, the book is clearly written and well organized. It has a special merit in presenting many of the analytical results as propositions, and then demonstrates their proof. This makes it easier for the reader—and the nonprofessional student—to grasp what the author is trying to say and what he is trying to prove. A special merit, too, is the fact that the author is generous in depicting the development of various analytical concepts through the course of economic thought. This presents the reader with a better perspective of the significance of the topics under discussion. At times, however, the historical method is responsible for some confusion in the limited discussion given to some of the earlier writings after they have been introduced. This points to one of the general shortcomings of the book, the failure to draw together many diverse comments about a given subject into an integrated treatment. The author should not be condemned alone for this, however, since there is much difference of opinion by economists on many of the subjects discussed.

After a very lucid and excellent introduction to the meaning of economic theory, economic history, and normative economics, the book is divided into five parts. These follow rather closely the usual presentation of microeconomic analysis—the equilibrium of the household; the equilibrium of the firm, capital, interest, and profits; general equilibrium; and monopoly, oligopoly, and monopolistic competition.

Part I is extremely well done. It presents a very clear description of the nature of utility theory and brings out well the differences in approach between cardinal and ordinal concepts of utility. The student is given an elementary introduction to some of the more sophisticated notions of utility as developed by Kaldor, Hicks, von Neumann, and Samuelson. There is some question, however, whether the broad-brush manner of treatment adds to the student's knowledge or confuses him. Part II in general is written with the same high quality as Part I. The theory of the firm and production theory are presented in terms of both long- and short-run conditions. Some may have doubts as to a discussion of equilibrium of the industry and full employment equilibrium that is presented in microterms without relation to pertinent macroanalysis and without considering the welfare implications; although welfare functions as they relate to production are treated.

Part III does not seem as well organized nor as well presented as the earlier parts. It is concerned primarily with aspects of distribution theory, primarily capital and interest and profits. A very good discussion of some earlier thinking is presented in the review of the ideas of Ricardo, Jevons, Böhm-Bawerk, Wicksell, and Knight. The reader is a little disappointed in the rather brief attention given to general equilibrium in Part Four. The last part of the book presents some of the models other than those of pure competition—monopoly, monopsony, oligopoly, duopoly, price leadership, and monopolistic competition. These in general are adequate reviews of the formulations of standard authors in these fields.

In general, this book is quite different from most of the books in intermediate theory. It is refreshing in its approach, and scholarly in its presentation. It should be well received by the instructor; in fact there is some

danger that at times the author is directing his attention to the instructor (and his colleagues in the economics profession) rather than to the undergraduate student. It would have helped if the author had preceded each section with a statement as to what the following chapters are about, what types of problems are to be discussed, and what understandings are to be derived. In this respect, the book lacks teaching organization. Some of the topics do not seem to fit well into the context in which they are presented. There also is an excessive reliance on curves to prove points with an undue assumption that the student has become familiar with the underlying concepts through exposure to a prior course in elementary economics. True, the author is torn between repeating basic principles or omitting too much. Perhaps the decision here went too far in the direction of omitting necessary explanatory materials.

Among the introductory views expressed by the author are several that should appeal to the reader, such as that economic theory should be concerned with tracing causal relations and building replicas of the real world, that generalizations should be deduced from observations and experience, and that the historical method should be concerned with more than mere description as it seeks to explain in an orderly and systematic manner what is happening in the economic sector. At times, the reader is not sure that these objectives are always achieved, that some of the presentation becomes esoteric rather than an aid to understanding and explaining economic reality.

In evaluating this volume as a possible textbook, one must bear in mind that its focus is upon a closed competitive system and that its emphasis is on microeconomics. The fact that a number of other topics might have been included—for example, a more adequate treatment of wage theory (since interest and profit theory were given considerable attention), or a more extensive discussion of full employment equilibrium—would perhaps be irrelevant and beyond the scope of the volume undertaken by the author.

RUEBEN E. SLESINGER

University of Pittsburgh

Economic History; Economic Development; National Economies

The Real National Income of Soviet Russia since 1928. By A. BERGSON.
Cambridge: Harvard University Press, 1961. Pp. xix, 472. \$8.75.

This is an important book. It brings to a conclusion an immense job of reconstructing and analyzing the Soviet national income. Previous volumes were confined to calculations expressed in the prices of the respective years. To obtain meaningful growth rates it was, of course, necessary to express these rouble figures in constant prices, which is a formidable task. Teamwork is essential in a project such as this, and it is certainly no criticism but rather a matter for praise that Professor Bergson was able to utilize the research of talented colleagues whose help he generously acknowledges.

The results as presented give us national income by use in constant as well as current prices for the years 1928, 1937, 1940, 1944, 1950, and 1955.

They do so in a number of variants, using constant rouble prices of different years as they stand and adjusting them to correspond to the factor-cost concept. There is a wealth of more detailed information relating to household consumption, communal services, government, defense, gross investment, etc. There are stimulating comparisons with U.S. growth rates in earlier historical periods.

Everything is thoroughly documented; and the large quantity of detailed supporting evidence provides valuable food for thought about all sorts of topics. The results of all these calculations are carefully contrasted with estimates made by other analysts. There is enough in this book for scholars to chew over for years. Therefore, whatever question marks or criticisms may be found later in this review, it must be clearly stated that no one interested in the subject can afford to miss this book. Apart from the "Sovietologists," it should also make good reading for those who value statistical and analytical ingenuity, and who appreciate the energetic and patient pursuit of facts and figures in the face of a variety of obstacles.

The reviewer once launched a perhaps excessive assault on an earlier book in this series. What concerned him then was the treatment of agricultural incomes. This was based on value percentages in virtually unknown prices, and the margin of error seemed untenably large. These objections, whatever their validity, do not apply to the present volume. Thanks to more liberal publication of data in the USSR, and to some very thorough research work, the agricultural calculations are now based on actual quantities and prices. The available statistics are used with great skill and accuracy. When the results appear to be questionable on grounds of rough political commonsense, it is clear that the commonsense picture may be wrong and Bergson right.

Yet it follows from the methods used in analyzing farm output that the whole of the margin of error falls upon peasant consumption in kind which is the residual. This needs to be borne in mind in assessing Bergson's proposition that a working collective farmer in 1937 had a real income higher than did "ordinary workers below the rank of foreman" in Soviet industry. This would be politically and economically a most important fact, for it would help to explain the slowing down of industrial growth around 1937 (there would be acute difficulties in labor recruitment), and also the harsh anti-peasant measures which were taken shortly afterwards. But the reviewer continues to feel lingering doubts. The 1937 harvest was exceptionally good, and there is ample evidence that the distribution of grain to peasants reached very high levels. The 1936 harvest was a very poor one, and for much of the calendar year 1937 the peasants must have been suffering from the after-effects of the 1936 harvest. This does not seem to have been allowed for.

But even accepting the 1937 calculations as a basis, a further question arises concerning agricultural incomes. For example, for 1952 Bergson shows farm incomes in kind in constant prices to be higher than in 1937 (p. 337). True, there is a difference in territorial coverage, but this was balanced by the reduction in peasant numbers due to war and migration. Since there was also a large increase in the value of peasant sales in free markets, which must have more than offset the decline in the real value of collective farm cash

distributions and the increase in taxes, one is left with the remarkable conclusion that the peasants were better off in 1952 than in 1937, which was the best year of the 'thirties. Would such a conclusion be consistent with the known state of Soviet agriculture at Stalin's death? Possible sources of error are exaggerations in official farm output statistics, which Bergson indeed warns us about, and possibly also an underestimation of production expenses in kind, especially within the private sector.

Very interesting questions are raised by Bergson's illuminating discussion of "adjusted factor cost." It is not always quite clear, at least to the reviewer, precisely what it is that is being claimed in this connection. At times all that Bergson appears to say is that, despite their many imperfections, actual Soviet prices net of turnover tax and subsidies are the least objectionable of the available weights. With this proposition one can agree, the more so because Bergson presents his data using alternative weights, so that anyone who believes that unadjusted rouble prices should be used is provided with indices in such prices also.

However, in some passages Bergson puts forward a claim that prices are conceptually right in a Soviet-type economy, for the measurement of welfare and of production potential. In a reply to Peter Wiles, he points out that the proper welfare criterion to adopt must relate to planners' preferences and not consumers' preferences. Quite so. But this raises some very difficult issues. What are planners' preferences? Clearly we cannot assume that they are identical with the goods and services actually produced or provided. After all, when the Novozhilov-Kantorovich school of Soviet economists argues that prices of factors of production should reflect their relative scarcities *in relation to planners' preferences*, the latter are defined as the general goals of the plan, and the whole point of that school's criticism is that existing Soviet prices do not reflect such relative scarcities. They would certainly deny that it would be sufficient for their purposes to eliminate turnover tax and subsidies.

Nor is it a matter merely of charging a standard sum for the use of capital and land (Bergson experiments with such charges). In their view these charges should be greatly differentiated to take into account varying degrees of scarcity, opportunity-cost, etc. They argue that if prices were so fixed, planners would rationally choose different means to achieve desired ends, i.e., that the pattern of production would be different with planners' goals unchanged. Bergson seems to take the view that because relative wage rates in 1937 reflected a free market for labor, and retail prices enabled supply and demand approximately to balance, average prices of that year have some special meaning in terms of welfare, etc., provided they are net of turnover taxes and subsidies. But if planners make decisions involving the use of labor in a sector where, probably without their being aware of it, opportunity cost is very high, if prices do not even pretend to reflect this situation, and if intermediate products, capital and land are administratively rationed, we seem far away from values related to welfare or production potential.

Peter Wiles argued that canal building was a conspicuous example of waste. Viewed as a means to an end, and not as part of a final bill of foods, canals

seem indeed to have been wasteful; the Soviet writer Tvardovsky recently claimed that Stalin chose canals because he wished the great works of Stalin to be visible from the planet Mars. However, in another sense canals then become ends in themselves, an integral part of planners' preferences. In still another, they may be seen as evidence of a clash between the realization of production potential and an extra-economic preference for particular means. Space precludes pursuing this discussion further. It is only right to repeat that Bergson seems justified in using these conceptually impure prices as weights, because alternatives are even less satisfactory.

One wonders why any effort was devoted to reconstructing the Soviet national income for the year 1944. Prices had little meaning when shortages of every kind were so acute, and much of the necessary information for that year is lacking or ambiguous. The figures for free-market turnover seem unbelievably small.

The methodology of deflating by price indices is the subject of a stimulating discussion. In calculating the increase of volume of consumption from 1928 to 1937 in 1928 prices, Bergson deflates by an index derived from revaluing the 1937 basket of goods in 1928 prices, i.e., his weights are 1937 weights. Arguing against Jasny's 1926-27 price deflator, he maintains that his (Bergson's) version is the logically correct one. Why? Certainly Jasny was not justified in using only early-year weights and presenting them alone as correct. But when Bergson does use 1928 weights his result is very close to Jasny's. Surely the familiar index number problem does not permit us to describe one set of weights as more correct than the other.

Finally, a point concerning the implied volume indices of production. Bergson's tables and calculations are in principle confined to national income by use, not by origin. In this way he might be thought entirely to avoid the pitfalls which beset those who, like Nutter, Seton, Hodgman and others, endeavor to construct output indices. But, of course, production figures underlie the Bergson calculations, directly or indirectly. This is most clear in the case of the investment index. For example, he uses Moorsteen's machinery indices. Anyone endeavoring to calculate either price or volume indices for machinery faces the familiar and very awkward problems of how to value new products, of comparability, changes in design, inadequate statistical coverage, etc. The dangers of error on the part of even the most careful scholar are very great. To say this is not to cast aspersions on either Bergson or Moorsteen. Far from it. They know this very well themselves, and often say so. The point is simply to emphasize that these difficulties cannot really be resolved. Needless to say, the results remain of the greatest interest. Thus Moorsteen's price index shows that machinery prices in 1937, using 1937 weights, were actually lower than in 1928, despite the intervening inflation. The use of 1928 weights makes a great difference to the rate of growth of both machinery output and the national income. No wonder Soviet statisticians obstinately refuse to recalculate their official growth rates for the period before 1950 into prices other than those of 1926-27. Their political masters might well be shocked by the results.

One can only end by again expressing grateful thanks to the author for providing students of the subject with such vast quantities of valuable material in so clear a way, and for giving us so many subjects for discussion.

A. NOVE

*The London School of Economics
and Political Science*

France and the Economic Development of Europe, 1800-1914: Conquests of Peace and Seeds of War. By RONDO E. CAMERON. Princeton: Princeton University Press, 1961. Pp. xviii, 586. \$10.00.

The literature of international movements of capital ranges from primarily political studies like Herbert Feis's *Europe, The World's Banker*, to such economic analyses of statistical data as are associated with the names of A. K. Cairncross, Brinley Thomas, and Albert Imlah. There are relatively few works that have both virtues. The classic example is Leland Jenks' *Migration of British Capital to 1875*, a book that combines the research in depth so prized by the historian with quiet competence in its handling of financial matters and with exceptional felicity of style. In Cameron's study of the French experience, we now have a similar economic history in the full sense of the term.

A more detailed comparison of the two works is suggestive. Jenks' *Migration* is more concentrated in its emphasis, more even in its coverage and distribution, more unified in its development. Cameron's study is broader. He sees the export of capital as only one aspect of a larger French contribution to the economic development of other countries, a contribution embracing the work of French entrepreneurs and technicians abroad, the instruction of foreign students in French schools, and the example and lessons offered by French law and political institutions. The result is a significant gain in conceptual scope. But it is achieved at some sacrifice of architectonic harmony.

Cameron's strong point is international finance and the capital market, and it is here that he has made his greatest substantive contribution. No one, with the possible exception of Bertrand Gille, has worked longer or more effectively exploring the public and private manuscript sources of banking history and the related diplomatic and political archives. His researches have taken him to a half-dozen countries; and a remarkable flair for evidence has enabled him to locate and open for the first time important documentary deposits whose riches are yet to be fully exploited. This alone would be enough to place economists and historians in his debt.

As a result of these researches, Cameron has been able to revise and fill out considerably our knowledge of the golden age of French foreign investment banking—those decades from 1852 to 1882 when the *Crédit Mobilier*, its associates, imitators, and rivals took the lead in covering Europe with railroad track and with a network of banks that came to play their own developmental role in the countries of their establishment. His largely original discussion of the competition for concessions and the ups and downs of

company finance is a remarkable case study of the interplay between business and politics and offers interesting analogies with the maneuvers that attended the development of the oil industry a half-century later.

Equally new is the material on the contribution of French enterprise and capital to the early industrial development of Belgium and Germany. The support of French investors, acting through private merchant banks like Rothschilds and Hottinguers, goes far to explain the burst of promotion in Belgian metallurgy and mining in the 'thirties and 'forties that helped make Belgium the most precocious industrial nation on the Continent. In Germany, French investments were more closely associated with direct enterprise: capital from the northern coal field, in conjunction with Belgian and British interests, exploited a number of major Westphalian mines; French technicians, supported by an alliance of French and German capital, played the decisive role in the development of the German nonferrous metals industry; and the largely French-founded and managed Phoenix Corporation was the first and largest integrated concern in the German iron industry, accounting in 1855 for almost a sixth of total Prussian output. It was about this time that French influence reached its high-water mark. The following years saw French managers and technicians replaced by German personnel, French holdings taken over by German investors. The story of this transfer and the rise of Germany to the position of competitor to France in the backward economies of eastern and southeastern Europe is still a comparatively unexplored area of research.¹

At this point, two questions arise: (1) What were the consequences of this export of capital and skills for the development of the French economy? and (2) What are the implications of these accomplishments for our understanding of the factors determining the rate and character of French economic growth?

To the first Cameron's answer is qualified. The export of institutions, knowledge, and talent, he feels, cost France nothing; on the contrary, they brought valuable returns in political security and in the mutually advantageous growth of partners in an international market. The export of capital, on the other hand, yielded a mixed harvest. The large sums sunk in the paper of impecunious foreign governments often brought orders for French manufactures (though far less than the amount of the loans). But even then, they went mostly for the waste of pomp, corruption, and armaments, and did far less than direct investments would have done to promote the economic development of the countries concerned. Though most of these state funds continued to pay interest punctually up to the First World War, they were by any standard of long-run rationality a poor investment. It was not only that war and revolution brought inflation and repudiation and wiped out a large share of French foreign holdings (Russian bonds alone accounted for more than one-fifth of these in 1914);² the fact was that, long before the war, many

¹ See *inter alia* J. Legge, *Kapital- und Verwaltungsüberfremdung bei der Industrie und den Verkehrsanstalten Deutschlands von 1800 bis 1923/4* (Halberstadt, 1924); B. Brockhage, *Zur Entwicklung des preussisch-deutschen Kapitaleports* (Leipzig, 1910); G. Diouritch, *L'expansion des banques allemandes à l'étranger* (Paris and Berlin, 1909).

² According to Harry D. White, *The French International Accounts, 1880-1913* (Cam-

of these mismanaged governments were paying the rapidly mounting interest on their debts only by new borrowings, and that the pyramid of credit would eventually have collapsed in any case.³

The question still remains whether French economic growth would have been more rapid had this capital been placed within the country. Cameron has his doubts. He remarks (p. 504) that there is no reason to assume that this money would have been invested in France in the absence of foreign outlets. After all, French industrialists could have borrowed if they wished; if they did not, he argues, it was frequently because investment would not have paid anyway.⁴

He may be overestimating the rationality of this decision. Yet in any event, he seems to me to put his finger here on an important determinant of the distribution of French investment. From the Pereires on, the interest of French financiers in foreign operations reflected in large part the limitations of home demand. It was not so much quantity as quality that was lacking: the self-respecting firms avoided medium and long-term borrowing as much as possible, resorting to outside help only in time of distress, precisely when the lenders were not interested. Too often credit was linked to rescue operations rather than healthy growth. Small wonder that foreign operations, particularly flotations of government securities, looked more promising to banks like the *Crédit Lyonnais* and the *Société Générale* than domestic lending.

On the other hand, one should not underestimate the influence of these banks on the allocation of French investment (p. 504). A number of scholars have noted the importance for the movement of British capital of the institutionalized preference of the London market for overseas issues.⁵ *A fortiori* was this true of France, where the large branch banks, in which was concentrated a substantial share of the country's disposable small and medium savings—the kind of savings whose owners were most desirous of and susceptible to “expert” advice—committed themselves by the 1880's to foreign invest-

bridge, Mass., 1933), pp. 275 n. 1, France lost some 23 billion francs in foreign holdings during the war, or some two-thirds of her *net* investments abroad. On the basis of Cameron's estimate of some 46 billion francs in net foreign assets in 1913 (p. 79), the loss amounted to one-half.

³The best analysis of the subject remains that of H. D. White, *French International Accounts*, pp. 272 *et seq.* Cameron has not attempted an independent estimate of the rate of return of French holdings abroad comparable to the one effected by Cairncross for Britain (*Home and Foreign Investment, 1870-1913* [Cambridge, 1953], ch. ix). Discretion here was probably the better part of valor: it is not clear whether one can attach real meaning to calculations that do not and perhaps cannot take into account capital losses as a result of bankruptcy and default.

⁴It is an interesting and important question how much French enterprise avoided long- and medium-term borrowing for nonrational reasons. The newly published study of Jean Bouvier, *Le Crédit Lyonnais de 1863 à 1882: les années de formation d'une banque de dépôts* (Paris: S.E.V.P.E.N., 1961), offers abundant evidence of the emphasis of French firms—even large corporations—on self-financing as a virtue and a way of business.

⁵Cf. H. S. Foxwell, “The Financing of Industry and Trade,” *Economic Journal*, XXVII (1917), 502-22; F. W. Paish, “The London New Issue Market,” *Economica*, n. s., XVIII (1951), 1-17.

ment. In the light of the developmental role of investment banks outside of France, especially in Belgium and Germany, it seems unreasonable to assume away the contribution that French banks might have made to home industry had they shown more imagination and initiative. To be sure, as Cameron notes, the periods of greatest export of capital were also those of rapid domestic capital formation.⁶ Yet while this may refute the argument that capital exports "starved" French industry (p. 504), it hardly demonstrates that the two outlets for investment were not competitive.

The second of our questions—the implications of Cameron's findings for our appreciation of the factors shaping French economic growth—is one to which he does not address himself directly. In particular, he does not choose to re-examine the much debated allegation that entrepreneurial shortcomings were a major determinant of French economic retardation in the light of his own findings. And this is the more unfortunate because, for one thing, the subject needs explicit clarification and few scholars are so qualified as he to elucidate it; and for another, readers will inevitably be inspired to draw their own unguided conclusions.

One can, to be sure, infer certain elements of Cameron's interpretation. Thus he seems to offer a variation on the traditional assumptions of slow industrial development in France (p. 64 f.): reasonably rapid growth until the 1880's, then a "long and costly depression" that "adversely affected the psychology of entrepreneurs and investors with results that have not yet been completely erased" (p. 71).⁷

The above might seem to imply acceptance of entrepreneurship as a significant factor in the slowing of French growth after 1882. And yet I am not sure. Cameron is not inclined in the last analysis to lay much weight on psychological attitudes (a major element in entrepreneurial behavior) as an autonomous or persistent determinant of growth. "The emphasis is on institutions": "a rational legal and juridical order, based on a secular conception of society and allowing for geographical, occupational, and social mobility of

⁶ In this connection it would be helpful to have year-by-year estimates of domestic capital formation and national income to set alongside those of export of capital. Whether it is feasible to produce such estimates is another matter. Here we must wait on the work of Jean Marczewski's team at the Institut de Science Economique Appliquée in Paris. Cf. the first two volumes in the new series "Histoire quantitative de l'économie française," ed. J. Marczewski: Vol. I. J. Marczewski, *Histoire quantitative: buts et méthodes*; J. C. Toutain, *Le produit de l'agriculture française de 1700 à 1958*, Part I: *Estimation du produit au XVIII^e siècle*; Vol. II. J. C. Toutain, *Le produit de l'agriculture française de 1700 à 1958*, Part II: *La croissance* [F. Perroux, ed., "Cahiers de l'Institut de Science Economique Appliquée, Series AF, No. 2, Suppl. No. 115 (July 1961)"] (Paris: I.S.E.A., 1961).

⁷ The simple substantive question of France's absolute and relative rate of economic growth still remains to be explored. Traditional assumptions of slowness are disputed by Raymond Aron, *France Steadfast and Changing* (Cambridge, Mass., 1960), p. 45, in so far as the twentieth century is concerned. And the forthcoming study of Maurice Lévy on the French economy in the first half of the nineteenth century may also argue for more favorable estimates. Needless to say, revisionist assertions are not likely to settle the issue; but they do indicate the need for more accurate information, particularly of a comparative nature.

persons"; "given the appropriate institutional environment, individual psychological motivations have a way of adapting" (pp. 505-6).

This last generalization seems to accord with the position advanced by Cameron in a number of earlier analytical articles on the character and determinants of French economic development.⁸ His argument is a refinement of the Clapham thesis, that France's industrial retardation has been (or was) the result of inadequate material resources, of the scarcity of coal in particular. As Cameron once put it in a felicitous phrase, the French economy suffered "from a lack of minerals in the diet."

As for entrepreneurship itself, there is no way of knowing from his book how Cameron would react to the inferential judgment of one reviewer, who wrote: "Although Cameron's purpose is not to refute the popular theory that French businessmen have always been shortsighted and unenterprising, the whole burden of his story is that such a stereotype does not fit nineteenth-century France."⁹ His work certainly alters the usual image, but it is not yet clear how, and his silence may be an act of discretion. Certainly there is a great deal more we need to know about this matter before arriving at conclusions. For example:

How did French entrepreneurship abroad compare with entrepreneurship at home? (There is no reason to assume that the one is the same as the other, either in intrinsic potential or performance. On the contrary, the presumption is that emigrant entrepreneurs are the products of a process of social selection.)

Why do those French entrepreneurs who operate abroad do so? (Presumably in order to obtain a higher rate of return. But why the differential? Cheaper raw materials? Minerals unavailable at home? What of opportunities for new men at home and the recruitment of talent into domestic enterprise?)

How does French enterprise abroad compare with that of other countries? How does it perform under competitive conditions?

If Cameron does not address himself to these questions directly, we are nevertheless in a far better position to consider and answer them thanks to his work. By assembling this impressive body of evidence of the diffusion of French intellectual, institutional, technological, and financial influence, he has corrected an excessively low evaluation of France's economic role in an age of industrial revolution. He reminds us that through the first three-fifths of the nineteenth century the French economy was in many areas the most advanced in the Continent, well ahead of the German, to say nothing of the more backward nations to the south and east. And he offers impressive illustrations of the energy and imagination with which the French exploited the opportunities offered by this differential. Here lies his major contribution: he has done much to restore our sense of proportion.

In so doing, he has marked out a path for future research. An enormous

⁸ These are cited in his bibliography, p. 545.

⁹ Gordon Wright, in *The Journal of Modern History*, XXXIII (1961), 446. This theory, if held, is presumably popular in the literal sense of the word; I know of no scholar who has ever proposed or accepted such a stereotype.

task lies ahead: to see and understand the diffusion of institutions and techniques as part of an international process of development; to fit countries other than France into the stream; and to build our analyses on comparative data that permit isolation and evaluation of the several economic variables. It is not often that a book is important both for what it says and what it does not say, for the information it gives and the guidance it promises in future explorations. This is such a book. Cameron is to be congratulated.

DAVID S. LANDES

*University of California,
Berkeley*

Economic Growth in the United States: Its History, Problems, and Prospects.

By SUMNER H. SLICHTER. Edited by JOHN T. DUNLOP. Baton Rouge: Louisiana State University Press, 1961. Pp. xiv, 196. \$5.00.

These five chapters represent a revision of Professor Slichter's five Merrill Foundation lectures delivered at Tulane University in April 1954. The revision was left incomplete on Slichter's untimely death in September 1959. John Dunlop, as Slichter's literary executor, refrained from carrying the revision further; his principal substantive contribution is a valuable introduction, which points out the importance with which Slichter regarded these particular lectures in summarizing and setting forth his economic philosophy.

The titles of the five chapters (lectures) are respectively, "Some Discussions of Economic Growth and Evolution," "The Growth in Output per Man-Hour in the United States," "Some Elements in a General Theory of Private Demand," "Conditions and Institutions of the Economy to Increase the Demand for Goods," and "The Future of Economic Institutions in the United States." They were left in widely different stages of revision, with the second lecture (on the growth of productivity), apparently closest to completion. At any rate, this second lecture is at once the most scholarly of the five and the most immune from the *ex cathedras* and *ipse dixit*s of Slichter's extracurricular style in his later years.

Let us turn then to this second chapter, which should also be the longest remembered of the book under review. It formulates what I propose to call "Slichter's Law," a statistical generalization that over-all labor productivity accelerates over time. Evidence in favor of this proposition is collected from a broad range U.S. economic history, and Slichter has every confidence that the proposition will continue to hold for at least the middle-run future. (This reviewer harbors skeptical doubts, if hours of labor fall further and the labor force shifts further away from "goods" to "services.") It would likewise be interesting to see to what extent Slichter's generalization applies to other countries in various stages of development.

In conformity with his generally sanguine outlook, Slichter regards the acceleration of productivity as favorable to the maintenance and increase of the U.S. growth rate. This is obvious enough, if one is not concerned with aggregate demand. In terms of the Harrod identity (for which Slichter does not conceal the scantiness of his regard), $G = (S/c)$, Slichter's law implies a

steady fall in the marginal capital-coefficient c , and accordingly (barring a fall in the saving-ratio S), it implies a steady rise in the growth rate G . But in terms of the Domar equation (which Slichter does not consider at all in this connection), Slichter's Law, if verified, is a source of pessimism rather than optimism. If net investment I increases full-employment output by $(\sigma_0 + \sigma_1 t)dt$, rather than by (σdt) as in Domar's original, and if the corresponding increase in purchasing power is, by the Keynesian multiplier process, (dI/α) , where α is the marginal propensity to save, the Domar moving-equilibrium path for investment at full employment becomes

$$[I = ke^{\alpha(\sigma_0 t + .5\sigma_1 t^2)}].$$

This is even more difficult to maintain, and no more stable, than the standard Domar time path

$$(I = ke^{\alpha \sigma t}).$$

The last paragraph, of course, criticizes Slichter implicitly from a Keynesian point of view which he did not himself accept. His third chapter, on consumer demand, is devoted to explaining why; it parallels at many points an *Atlantic Monthly* article on "The Passing of Keynesian Economics." Slichter's main point is that consumption, far from a passive resultant of contemporaneous disposable income, depends on assets and future income (credit), and is in fact an active force with "multiplying" power of its own. This type of criticism has been taken in stride by Keynesians ever since the demonstration-effect arguments of Duesenberry and Modigliani in 1946-47. Since Slichter's Tulane lectures, furthermore, the work of Tobin and Friedman (the former generally Keynesian, the latter decidedly not) has taken a good deal of the free-will wind out of his sails. It is unfortunate that Slichter did not live to fit their results into his own surmises, particularly the Friedman permanent-income hypothesis to which he now seems to have supplied a prelude.

The other three chapters are one long running battle with underconsumptionists and stagnationists past and present. Slichter's opponents in the first chapter are Mill, Marx, Veblen, Keynes, and Schumpeter. Each is formidable enough by himself, it would appear, and it seems to this reviewer that Slichter delivers only glancing blows against most of them. (Much of his argument seems traceable to the special circumstances of the Second World War, the cold war, or public intervention generally.) Chapters 4-5 are almost equally polemical, as Slichter asserts his faith that, in the United States at least, stagnation is a bogey, and the route is ever onward and upward. With each succeeding paragraph or section I awaited the answer to the \$64 question of all such discussions: "Could we afford to disarm?" Alas, there was no answer. Indeed, the question was never raised. In default of both question and answer, the whole discussion fell rather flat.

The flatness may not be Slichter's fault, in that the manuscript Dunlop published may have been incomplete. Two or three years before Slichter's death, the reviewer heard that Slichter's Tulane lecture materials contained a definitive answer to the argument of Joseph Steindl's *Maturity and Stagna-*

tion in the American Economy (Oxford 1952). An inquiry to Slichter himself elicited a reply confirming the rumor but soliciting patience, since the manuscript was still unready for outside readers. Now, four or five years later, the published version of these same lectures mentions neither Steindl, his book, or his particular form of stagnationist dilemma.¹ This episode, of no importance in itself, suggests that on many other issues Slichter may have had more and better things to say than appear in print in this posthumous work.

Slichter backs away in this volume from certain views with which he was most widely associated five or ten years before his death. For example, he no longer wishes to maintain that the U.S. economy is or will soon become a "laboristic" one, dominated by its trade union movement. As for secular inflation, he still considers it a small price to pay for a "free" trade union organization, but now believes (p. 187) that:

the rise of white-collar workers will mean a slight dilution of the strength of the trade union movement and more of a balance of power on the whole between unions and employers. Eventually, the increase in the number of white-collar workers may cause a disappearance of the problem of creeping inflation, which is a sort of symbol of the excessive strength of the unions of manual workers.

The optimism which so endeared Slichter to the business community (apart from his inflationist heresies) stopped short at the borders of the developed world. There is nothing of the Pollyanna in his admission (p. 152) that:

The educational arrangements for educating the ablest young people . . . seem to be more highly developed in Russia than in any other country. . . . Russia should be able comfortably to outstrip the West in technological progress.

And so for "the rest of the world—especially . . . much of Asia, the Near East, and much of Africa," Slichter borders on the submissive, forecasting that (p. 192 and footnote):

the vacuum created by the collapse of western colonialism will [not "may"] be replaced by dictatorships operating under Russian tutelage and with the help of Russian administrative and technical experts. (The dictatorships would come anyway because they are an effective way of making modern technology available to ignorant and poverty-stricken peoples, but the incentive to establish them is increased by the investment of western capital in these regions. The seizures of the plants of western corporations in southeastern Asia, the Near East, and in much of Africa will [again, not "may"] supply the dictatorships with much-needed capital.)

M. BRONFENBRENNER

University of Minnesota

¹The Steindl dilemma can be stated briefly: competitive industry is too risky to attract household savings at any reasonable interest rate, while monopolistic and oligopolistic industry is too interested in maintaining "insider" control and restricting output to attract household savings in adequate volume. In the first case, investment is less than full-employment saving because of supply considerations; in the second, because of demand considerations on the market for loanable funds.

Economic Development for Latin America. Edited by HOWARD S. ELLIS with HENRY C. WALLICH. New York: St. Martin's Press, 1961. Pp. x, 479. \$10.00.

This is a collection of papers, critical comments and discussions of a round-table of the International Economic Association held at Rio de Janeiro in August 1957. As Howard Ellis points out in his introductory notes, the main purpose of the conference was not so much to cover all possible issues in economic development but rather those chiefly involved with the supply of capital and with international economic relations.

Alexandre Kafka presents a rather theoretical interpretation of Latin American economic development. In his opinion relatively rapid progress in over-all Latin American growth has sometimes been associated with violent adverse shocks to the economic system. Such adverse shocks do not necessarily retard development; sometimes they may even precede positive growth. In the great depression, the most adverse shock in the century, there were countries, like Colombia and Mexico, which were able to get through the period with a rise in average real product. This implies that there might exist an optimum degree of adverse shock—although this does not mean, of course, that an adverse shock is necessarily better than a favorable one. (In the ensuing discussion Kafka declared that he just wanted to *explain* the positive growth effects of adverse shocks, not to *recommend* them.)

Macroeconomic global planning is defended by José Antonio Mayobre. Global programming consists in the setting of precise targets for the nation's economy. Such targets comprise not only specific projects, like the achievement of a certain steel capacity, but achievements of a more general nature, like a given rate of increase in per capita income. While fiscal and monetary policies deal with the problems of the economy on an *ad hoc* basis, global programming is an excellent weapon in the proper coordination of the nation's efforts for long-term growth.

However, the planning of targets is not enough; means have to be found to achieve them. And, according to P. N. Rosenstein-Rodan, in his paper on the "Big Push," tremendous efforts are needed to convert a stationary into a dynamic economy. To use Ragnar Nurkse's words, in the circumstances of our time, the poorer countries are not prepared to accept the inevitability of gradualness: they want to be launched into the state of self-sustaining growth; and that is only possible if a minimum amount of investment is made, sometimes irrespective of immediate needs. This is the theory of the "Big Push." Public overhead investment, in power, transport, etc., plays an important role in the process.

Roberto de Oliveira Campos discusses the problems of inflation and balanced growth. Distorting effects of inflation are felt in agriculture (supply disincentive effect), social overhead investment (bottlenecks in the saving process), balance of payments (terms of trade). There is general agreement that the strong inflationary bias in most of the underdeveloped countries, particularly in South America, derives from the fact that their growth process often finds its motivation on the demand side rather than in the entrepre-

neurs' drive to produce. Unfortunately the traditional weapons of monetary and fiscal policy are ineffective if monetary pressures come from wage increases.

The role and servicing of development capital is the subject of essays by Maurice Byé and Gerald M. Alter. The essence of economic development is structural change of a type that tends to be progressive; thus underdevelopment is not simply a backwardness in quantitative terms but is connected with certain structural features, more particularly with insufficient integration of the various sectors of the economy. While the main emphasis in Byé's paper is on the role of capital at different stages of development, Alter examines the various tests an underdeveloped country might have to face by potential investors. The mathematical models he proposes serve to demonstrate the upper limits of debt service capacity.

According to Javier Marquez's very interesting paper, the basic problem of Latin American financial institutions is a shortage of noninflationary funds. He makes a case for the fact that financial institutions are a function of economic development; the higher the level of per capita income the greater the quantitative importance of financial transactions per unit of gross national expenditure. He also makes a case for unspecialized banks because the flow of specialized funds is uneven whereas development must be a continuous process. As the investments of private financial institutions are determined by the structure of effective demand which, in Latin America, reflects sharp income inequalities and is not conducive to economic development, Marquez would prefer the establishment of public financial institutions to complement and in a certain way influence private banking.

According to Felipe Pazos, in his study on private versus public foreign investment, the relative needs of developing countries for loans and equity investment are in a ratio of 55 for loans to 45 per cent for direct investment. His main argument is that, in the long run, direct investment is costly to the developing country: United States direct investment in Latin America in fields other than public utilities is bringing an annual yield of 20 per cent contrasting with rates on loans of 5 or 6 per cent. However, as John Adler demonstrated in the course of the discussion, these figures are perhaps a little exaggerated: the effective cost of loans is probably considerably higher, around 10 per cent while the real yield on equity investments is lower; at the stage of the transfer it might reach 10 per cent but no more.

Ragnar Nurkse considered the compatibility of comparative advantage and balanced growth. Can international trade alone be the generating force for economic development? His answer is no, mainly for technological reasons; while Great Britain needed ever-growing imports to maintain the phenomenal growth of her 19th century economy, the rate of growth in the import demand of the United States, the dominant economy of the 20th century is much lower. Hence, since international trade alone cannot do the job, the demand needed to stimulate adequate expansion should be created locally, through balanced growth.

According to Gottfried Haberler, in his study of the role of the terms of trade in development, there is no statistical proof for the contention that the

terms of trade for all, or the majority, of underdeveloped countries have deteriorated; it is also unlikely that, in the long run, the terms of trade should run parallel for all underdeveloped countries. Although over the business cycle the prices of primary products do have a tendency to fluctuate more violently than those of finished goods, the degree of regularity and the magnitude of these cyclical fluctuations have been greatly exaggerated. Unfortunately, the excessive stress on terms of trade has led to preoccupation with symptoms which cannot be controlled or eliminated, especially not with unworkable schemes of price stabilization. Hence, the underdeveloped countries would be better advised to learn to live with a certain degree of cyclical instability. The impact of fluctuations should be softened in cooperation with the industrialized nations and international agencies.

The two following papers are based on somewhat different concepts. The prospects of primary products and the problem of the stabilization of the proceeds from raw material exports are analyzed by Theodore Schultz and Henry Wallich respectively. The whole world is deeply stability-conscious, income elasticity of demand for raw materials is too low, and therefore means have to be found to stabilize the incomes of primary producers. Unfortunately, according to Wallich, the prospects for pure stabilization agreements are poor. The case is better for commodity agreements including countercyclical loans and grants. Under this plan, the United States and perhaps other consuming countries, at times of declining commodity prices, would make loans to producer countries. The loans would tide over the borrowing countries financially but would also give some protection to consumer countries against an extreme upsurge of prices.

A paper on investment priorities, by Jorge Ahumada, concerned with some theoretical aspects of planning, is followed by a study by P. R. Brahmamanda of the University of Bombay, on agricultural vs. industrial development. The latter contains the traditional arguments for investments in agriculture, to reduce the hidden unemployment of rural masses, increase rural purchasing power and let the general economy benefit through higher employment, higher rates of growth and ultimately higher consumption standards. Thus, agricultural investment operates as the lever which sets the ball of development rolling.

The last study in the volume, by Jorge Marshall on exchange controls and economic development, contains an excellent description of the uses and abuses of contemporary exchange control practices. While Marshall does not exclude the possibility that there might be some arguments for exchange controls, in the case of flight of capital for instance, or as a means of taxation, his general conclusion is that freedom of exchanges has given a better climate for economic expansion in Latin America as well as elsewhere. Exchange controls are often the consequence of domestic inflation and its effect on the balance of payments.

The volume will serve as an excellent document to record the economic thought of Latin America in a very important stage, the stage which has just preceded the conclusion of the Alliance for Progress. The papers cover most of the representative aspects of present Latin American economic problems.

Perhaps a little more space could have been devoted to reports on the discussions which followed the presentation of each paper. Also more could have been said about operational problems—even in a debate of a theoretical nature. The lack of suitable projects is at least as great an obstacle to economic development as is lack of capital.

Membership in the conference was about equally divided between distinguished advocates of planning and *laissez faire*. Some of the planners were more convinced of the usefulness of direct than of indirect controls. They seemed to forget that less than twenty years ago direct controls, like exchange measures, had become most powerful weapons in the hands of totalitarians; this is all the more important to remember since nowadays similar methods have again been adopted in one of the most strategically located Latin American countries.

It was an excellent idea to have invited an expert in Asian planning to participate in the conference. Without exactly saying so he drew attention to the fact that Engel's Law is decisive, but only under certain circumstances. The population of huge subcontinents is still starving. The world has become so small, the five continents so interdependent that it will not be possible to isolate the economic development of Latin America from that of the rest of the world; in other words, such development will not depend any more on trade, or aid, from the United States or the Atlantic Community alone; its final success will depend also on what can be done to improve the lot of the masses, particularly in Asia, whose income elasticity of demand for food is still so high.

ARTHUR KARASZ

Bangkok, Thailand

Stanovništvo kao čimilac privrednog razvoja Jugoslavije. By MILOŠ MACURA. Ekonomska Biblioteka, Vol. 7. Belgrade: Nolit, 1958. Pp. 374.

Politika i metodi privrednog razvoja Jugoslavije. By NIKOLA ČOBELJIČ. Ekonomska Biblioteka, Vol. 10. Belgrade: Nolit, 1959. Pp. 378.

Students of Yugoslav economic affairs are here afforded a rare opportunity to look at the course of events from the viewpoint of active participants in policy formulation. These volumes in the Ekonomska Biblioteka are devoted exclusively to Yugoslav postwar economic development. They contribute considerably to our knowledge of the vicissitudes of an economy in which planning has not been able to fulfill completely its ambitious growth program. Macura makes an extensive inquiry into population and labor force as determinants of Yugoslav economic growth. Čobeljič undertakes a comprehensive study of Yugoslav development methods and policies. Both authors present their story against the background of the evolution of the country's internal economic institutions and its international commercial relations since the First World War, examining carefully the impact of population trends and development measures respectively on the national wealth.

Both books are factual and reasonably objective rather than theoretical and philosophical. Under circumstances where the latter approach presumably

would not have meant much more than wide quotation from a particular orthodoxy, this represents a definite advance. Macura and Čobeljič view sympathetically, though not uncritically, attempts of their government to deal with the problems of the postwar epoch. They take pains to show that many of the economic difficulties with which planning sought to cope had their roots in the prewar era. Čobeljič's work centers about the decade from 1947 to 1956: from the time when administrative central planning became fully effective to the years of decentralized government guidance of all essential sectors of the economy. Macura considers a somewhat longer period of time, on the basis of which some of his judgments with respect to population trends and contemporary economic development can be verified, although most of the expected long-term effect of population policies cannot presently be reliably gauged.

The arrangement of Macura's material is mainly topical, but chronological sequences are frequently used within the eighteen chapters. The author begins with a description of the demographic characteristics of Yugoslavia's preponderantly agricultural population with its low personal income and high degree of self-sufficiency. Population pressure did not change the economic structure very much between the two world wars and it has not been particularly conducive to economic growth. The Yugoslav community only started to reorganize the exploitation of its resources when confronted with new socio-economic goals after the Second World War. In spite of the noticeable structural changes that occurred in the years under review, a detailed analysis of production, national income, and employment trends in relation to population increase demonstrates that the postwar population policies succeeded only partially in solving the economic problems of the country. Macura unfortunately does not answer the question whether Yugoslavia's economic growth has simply recently become self-sustaining or whether somewhat heavy population increases, for two or three generations now, have not created some special pressure to raise the standard of living of this traditionally agrarian and, at least in Serbia, egalitarian society.

Macura correctly considers population both as a production and a consumption factor. The conclusion suggested is that population changes are at best a very secondary determinant of Yugoslav economic development. On the other hand, there is very limited evidence presented that economic development is a determinant of the size of the population, except for the customary effect of enforced urbanization and regional migration upon birth rates. Macura consequently devotes more attention to questions of the economic structure of population and the required shift of a part of the labor force from agricultural to nonagricultural occupations. He makes it quite clear that the rapid increase of nonagricultural population has been due to cultural progress at large as much as it has to economic planning.

The author contends in particular that the expansion of tertiary industries has reached an extent not compatible with the most efficient use of the country's resources. He acknowledges the need to expand industrial employment possibilities and stresses the dependence of employment upon the availability of trained labor and capital accumulation, but he also points out the rela-

tively low cost of a program aimed at improving working habits and the qualifications of labor in agriculture. He does not adequately substantiate his contention that the transfer of many young workers into nonagricultural occupations causes a significant lowering of the quality of the agricultural population. Gratifying to students of development is his reiterated conclusion that the misallocations of manpower use should be attacked by less expensive and less spectacular programs than those prevailing.

Čobeljč's monograph offers in Part I a discussion of the general problems of underdevelopment and the significance of the social system as a determinant of economic change. Part II deals with the methods and policies of development employed in Yugoslavia. Heavy emphasis is laid on the means of capital accumulation and the establishment of a structural equilibrium in the economy. Part III records achievements in increasing the means of production, income, and productivity, and in effecting some structural change. Part IV discusses problems emerging in the course of Yugoslav economic growth, such as the lags in agricultural production, price stabilization, and the financing of imports. The principal topics are the relationships between national income distribution and personal consumption, capital accumulation, and spending on social overhead; sources and volumes of capital accumulation; and the patterns and efficiency of new investments.

While Čobeljč's general conclusions are summarized at the end of the volume and technical development difficulties are extensively examined, he shows scarcely any awareness of the issues raised by the fundamental manner in which Yugoslav industrialization proceeds. The smallness of Yugoslavia as a hindrance to optimum size of enterprise is recognized but he does not stress how much this situation is worsened by the limitations and frequent redirections of foreign trade. He concedes that the lack of international investment causes procurement problems, but does not admit the heavy sacrifice in the standard of living. The slow rate of growth of personal consumption is in his view caused by insufficiently elaborate planning. The persistence of unutilized resources is also considered to be due mainly to technical problems arising from the execution of the planning program. Thus he does not consider it necessary to inquire into a possible overemphasis on medium and heavy industry capacity and into the matter of the replacement of peasant farming by collective producers. The postwar Yugoslav socio-economic system is frequently credited with being especially conducive to economic growth, but beyond stating that this system is "a historical necessity" there is little demonstration of its superiority as a factor in economic growth.

Čobeljč rightly points out that a development policy aiming at long-term effects may not yield its major results in its first decade. From this work it is difficult to establish the time perspective of Yugoslav planning. There seems to be, however, a growing awareness that the structure of investment must gradually adapt itself to the needs of harmonious development and a more balanced relationship between the various sectors. Continued, though allegedly no longer centrally administered, planning is relied upon to raise and further diversify production. Čobeljč does not consider the possibility that

the social compromises which are exemplified by worker's management and by the protracted co-existence of the collective and private sectors of the economy may be intrinsically unstable or that half-way houses may involve special problems of their own.

The events on which the two volumes under review are based are rich in situations that reveal want, not of energy, public spirit, or practical knowledge but of mastery over first principles. Knowledge of how a particular piece of planning machinery operates has not always been matched by deep understanding of its functions. There appears to be a studied effort by both authors to keep away from the elucidation of controversial issues. The use of Marxian stereotypes is fortunately infrequent. On the whole the presentation of both volumes is competent, and the interpretation of the data is sensible. Čobeljč's vast sweep is always discerning. His subject could nevertheless have been treated more evenly by dealing deductively with the main problems. Yet the student of development will find here interesting descriptions of functional and institutional approaches to production and distribution policy. A wider acquaintance with international economic literature than is revealed by the limited entries of foreign items in their bibliographies might have furnished answers to questions which puzzled both authors.

PAUL J. MEIER*

University of Massachusetts

* Deceased February, 1962.

The Role of Small Enterprises in Indian Economic Development. By P. N. DHAR AND H. F. LYDALL. Bombay: Asia Publishing House for Institute of Economic Growth, Delhi, 1961. Pp. xvi, 95. Rs 8.

In the flood of books on the role of small-scale enterprise and industrial estates in economic development this book—a result of collaboration in India between the Institute of Economic Growth and the M.I.T. Center for International Studies—provides a welcome change. Much of the previous literature views small enterprise as a basic sentimental virtue *per se*, approaching motherhood. This book, on the basis of the Indian experience, reviews and analyzes the arguments in favor of special assistance to small-scale mechanized enterprise; it sorts out those arguments that are valid from those that are at best questionable; it then uses the conclusions from this analysis to examine the program for aid to small enterprises in India and to make recommendations for changes on the basis of the conclusions.

The authors' general conclusions (pp. 20, 24, 31-32, 33-34; their italics) are as follows:

1. "Large factories can [frequently] produce the same volume of output by using less labour *and* less capital than would be used by small factories."
2. "Small firms are in fact more dependent on the external economies of a good local market, good supplies of raw materials from local dealers, and so on, than large and medium firms . . . If the Government is serious about decentralization then it must be prepared to persuade large firms to go to some

of these underdeveloped towns. Small firms will soon follow . . . [especially] if they are given encouragement by the provision of suitable facilities."

3. The main case for a special program of assistance to small enterprise rests upon the desirability of "trying to make the path of new entrepreneurship as smooth as possible . . . Any positive measures that can be taken to promote the *growth* of small firms into efficient medium sized firms will . . . be of great advantage to the [Indian] economy, since there is probably a thinness in the supply of such medium-sized enterprises.

4. Finally "there is no good case for giving small enterprises *preferential* treatment . . . The existing approach [in India] tends more and more to give special favours (preferences, subsidies, reserved areas, etc.) to small firms; the alternative approach would aim, rather, to *remove their disabilities*."

These general conclusions provide the basis for the evaluation of the industrial estates program and other programs to assist small-scale enterprises in India. With respect to the industrial estates program they find in many estates factory space is unoccupied because of the high cost of facilities or poor location of the estates; that estates in backward rural areas will be largely unoccupied unless larger firms can be encouraged to lead the way for smaller firms; that industrial estates should be "regarded not as homes for the weak and the inefficient but as nursery beds for small enterprises"; and that when this nursery-bed function has been performed and the small firms have grown into medium-sized firms, space should be provided in nearby industrial areas for the now-medium-sized firms, which should be replaced by other small firms in the estate itself.

With respect to various aspects of the general program of assistance to small enterprise in India—technical advice, supply of machinery, training, financial assistance, protection and subsidy, marketing assistance, and allocation of raw materials—the authors conclude that many parts are desirable, but the purely protective and subsidy aspects of the program should be reduced or eliminated. Stress should rather be upon providing services, information and finance at unsubsidized rates, so that the small firms can become more efficient, compete effectively, and grow.

While there are a few specific points in this analysis and series of recommendations which are questionable, I feel that the authors' general conclusions and specific policy recommendations are valid for India, to which the authors are careful to limit their analysis and conclusions. However it is of interest that A. Molinari of SVIMEZ in South Italy recently presented an unpublished paper on the Italian industrial estates program which was in general agreement with many of the Dhar-Lydall arguments.¹ Regardless of the direct applicability of the book it is certain that other countries can gain from the Indian lead and experience in this whole effort to encourage small enterprises. Therefore this book by Dhar and Lydall should be read not only in India but in any country on the threshold or early stages of an industrial development program. It is profoundly hoped that more books of this skeptical and analytic nature appear; for until now there has been far too much

¹ "Some Controversial questions concerning Industrial Estates," presented to the Madras Seminar on Industrial Estates in the ECAFE Region (Nov. 1-11, 1961).

sentiment, exhortation and description in this field and nowhere near enough objective analysis.

GEORGE ROSEN

Calcutta, India

Land Tenure, Industrialization, and Social Stability: Experiences and Prospects in Asia. Edited by WALTER FROELICH. Milwaukee: Marquette University Press, 1961. Pp. xv, 301. \$9.00.

This is a collection of essays submitted to a conference held at Marquette University in September 1959 to consider "one of the most fundamental issues confronting the economies of Asian nations: namely, the problem of land tenure and its relationship to economic, political and cultural change" (p. xi). The essays range rather widely in subject matter and in quality, reflecting differences in authors' interests and degrees of effort in preparation. Most of the papers are much narrower than the title of the book implies; they are devoted mainly to consideration of land tenure systems and land reforms in specific countries, with relatively less analysis of the interrelationship among land tenure, industrialization and social stability. (As a confession of ignorance, this reviewer is not even very certain what is meant by "social stability".)

The book is divided into three parts: Background, Land Reform Problems, and American Policies. The first part provides background in the most general sense of the term; it is a catch-all for essays that did not fit in well elsewhere. Froehlich's "Preliminary Remarks" are diffuse, and do not really get to the heart of the problem at hand. T. F. Marburg's long study of Western (mainly American) land tenure institutions and economic development, while interesting and informative, is not presented on a comparative basis relating to Asian nations, and the author does not draw conclusions of explicit relevance for Asia. It might well have been omitted. Yuan-li Wu's excellent paper on land reform and communes in Communist China is placed in Part I, evidently because it is the only study of a communist Asian country included.

The core of the book—and two-thirds of its length—is in Part II. In this context it is desirable to treat Kenneth Parsons' paper (in Part III) since it has mainly to do with land reform problems and in scope and approach is the most stimulating article of the collection. Parsons suggestively analyzes with a fairly high degree of generalization the "operative interrelationships in the village economies of Asia (and the place of tenure relations in this context) which need to be considered in programs of development and reconstruction for these economies." (p. 280). B. F. Hoselitz in a good paper has a somewhat similar approach. Among other things, he points to the conflict in land reform between welfare objectives and those of increasing output (and a marketable surplus): the distribution of land among all agricultural families makes for farms uneconomically small. This conflict comes up frequently in the papers on individual countries. Included also in this chapter is a sensible, pragmatic general paper on land reform by Lossing Buck, and a good, straightforward paper by Martin Bronfenbrenner suggesting why contemporary Asian coun-

tries are not placing major reliance on increased agricultural exports as a basis for their development programs.

There follow a series of country studies for Japan, Taiwan, South Korea, Philippines, South Vietnam, Thailand, Indonesia, India, and Pakistan. Most describe in varying degrees of detail the traditional land tenure system and the land reform programs that have been attempted, with main emphasis on welfare and output objectives within the agricultural sector. Which are the most interesting is partly a matter of taste; I thought the best to be Raj Krishna's long paper on India and Widjojo Nitisastro's on Indonesia. Krishna's paper is broad in scope, thoughtfully covering a wide variety of problems in terms of the basic issues with considerable insight. Nitisastro is concerned with the transmigration of agricultural families from overpopulated Java to underpopulated neighboring islands. The papers by P. T. Ellsworth (Thailand), H. L. Cook (Philippines), and William Bredo (Pakistan) are also good.

Part III (consisting of two essays) is a misnomer in that very little is said about American policies. Parsons assumes that United States policy is mainly to promote the economic development of Asia and, as indicated above, goes on to consider what that implies for the agricultural policy of Asian nations. The final essay in the book, by David Rowe, is the only one specifically devoted to the problem of land tenure and social stability. Rowe, using the experience of Taiwan as his major example, makes the general point that we cannot "rely entirely upon economic development for the inducing of social stability in Asian countries," (p. 294) and has specific comments on the destabilizing effects of land reform.

This book is not really aimed at the country specialist, since most of the country studies inevitably are insufficiently detailed, nor at the specialist on the role of agriculture in economic and social development, since the broader theoretical articles also are not fully developed. But it should prove useful for the economist generally interested in Asia and in land reform as it relates to economic development.

HUGH T. PATRICK

Yale University

The Achieving Society. By DAVID C. McCLELLAND. Princeton: D. Van Nostrand Co., 1961. Pp. xv, 512. \$7.95.

Robert L. Garner concluded from his experience during fourteen years as vice-president of the World Bank and president of the International Finance Corporation that differences in geography, natural resources, and availability of capital do not explain rapid development in some countries and underdevelopment in others. "I am therefore, forced to the conclusion that economic development or lack of it is primarily due to differences in people—in their attitudes, customs, traditions and the consequent differences in their political, social and religious institutions."¹ David C. McClelland presents measurements of a specific form of human motivation and shows that high levels of

¹ Meeting of the Board of Governors, IFC, Sept. 21, 1961.

that motive "recur regularly in the imaginative thinking of men and nations before periods of rapid economic growth."

The difference between Garner and McClelland illustrates the difference between an insightful observer and the scholar who contributes to the scientific discipline of economic psychology. This is an exact parallel to the difference between assertions about the role of confidence or mistrust in cyclical fluctuations and measurements of certain forms of attitudes and expectations which are shown to be widespread before the economy turns up or down. Prior to McClelland's work economic psychology contributed to the understanding of short-range changes in economic processes; his studies deal with much slower changes and encompass centuries and a variety of diverse cultures. Irrespective of whether change in national income during a business cycle or over centuries is studied, economic psychology demonstrates that it is possible and useful to go beyond asserting that economic development is the result of human behavior by measuring specific psychological factors and showing their correlation with subsequent economic processes.

In several earlier books McClelland and his co-workers isolated and measured certain motives (motives are relatively stable and enduring personality traits) primarily through responses to standardized picture tests carried out with school children and college students. Measurements of one of these motives, need for achievement, called *n* Ach. by psychologists, are extended in the new book to distant societies (e.g., ancient Greece, pre-Incan Peru, England from 1400 to 1800) as well as to contemporary societies.

Among several ingenious forms of measurement, just the most important instance will be mentioned here. McClelland assembled 21 imaginative stories from school books used by second- and fourth-grade children in each of 23 countries around 1925, and in each of 40 countries around 1950. Through standardized coding of these stories he obtained *n* Ach. scores and found them to correlate with measures of the degree of subsequent economic growth (both after 1925 and after 1950). Economic growth was measured in terms of real national income (in Colin Clark's international units) and in terms of electric power produced per capita, in both cases initial levels being taken into consideration (gains or losses over expected values were calculated from regression lines). McClelland emphasizes the many "obvious flaws of the data." Nevertheless, the manifold data presented must be viewed as strongly supporting his major hypothesis, namely, that certain psychological forces, roughly measured by high *n* Ach. scores, make universally for rapid economic growth. (It should be noted that later in the book *n* Ach. scores are expanded into an achievement syndrome which includes Riesman's other-directedness.)

According to McClelland the link between high *n* Ach. (A) and economic growth (C) is the presence of a large number of entrepreneurs (B). He is much more successful in demonstrating the relationship between A and C than between either A and B or B and C. Statements such as "Behaving in an entrepreneurial way is practically an alternative way of saying that a person has high *n* Ach." do not suffice to demonstrate the relation between A

and B. No evidence is presented in the book for the assertion that: "The businessman is more apt to be involved in new, risky or challenging problem situations in which there are many unknowns and he must improvise new solutions rather than apply existing specialized knowledge." How about the scientist or the engineer, or even in certain cultures the artist or the priest—do they face fewer new and challenging problems than the businessman? Why should additional energy, inner concern with achievement, concern with standards of excellence, concern with getting ahead, stress on hard work—to list some of the component parts of the achievement syndrome—manifest themselves exclusively and at all times in entrepreneurship? The terms entrepreneur, businessman, and manager are used indiscriminately. Sometimes trickery and even dishonesty are emphasized; lack of originality and routine in business behavior remain unnoticed. Uncritical esteem of all forms of entrepreneurship leads McClelland to close his book with a call for the U.S. government to subcontract aid to underdeveloped countries to private U.S. business firms so that "better men" might be employed in foreign aid.

The basic problem concerns McClelland's universalistic notions. We may admit that certain motivational traits may be described in universal terms and that economic growth is a meaningful concept in ancient as well as present societies, yet it is hardly conceivable that business behavior would not take different forms in different societies. Reliable studies about how businessmen actually behave are rare, even in this country at the present time, and McClelland, who constantly stresses the function of empirical research, can hardly be blamed for not having undertaken comparative studies of business behavior in different countries at different times.

If it were true that in different cultures different links might provide the connection between the presence of a large number of young people with high achievement motivation and economic progress, some of McClelland's conclusions about the current position and prospects of the United States would need to be reappraised. To be sure, according to one set of measurements n Ach. scores for the United States are low at present: After a sharp increase from 1830 to 1890 the scores dropped to the level of 1850 in 1950. (McClelland justifies these findings by a parallel movement in the number of patents issued per capita; yet the number of patents taken out is surely dependent on custom and circumstances rather than reflecting innovating activities alone.) According to the major set of measurements, n Ach. scores in the United States increased from 1925 to 1950 and were in 1950 among the highest in the world (slightly exceeded only by Australia, France, Canada and, surprisingly, Spain). And yet McClelland writes with reference to Galbraith that in an affluent society production is slowed down while in an achieving society it is speeded up. But possibly a mass-consumption economy represents a new phenomenon in human history in which motivations of millions of people rather than of a few business leaders account for the rate of economic growth. If so, then the role of business investment in nineteenth century England may not serve as a paradigm in the present-day United States.

Disagreement with some details and even with one major point does not detract from the solid achievement McClelland's book represents. Even

though the book is not the last word in the study of motivational factors responsible for economic growth, it is more than a beginning or a pointer toward new paths. Future studies of economic development cannot disregard what has been presented by McClelland.

GEORGE KATONA

The University of Michigan

American Economic History: The Development of a National Economy. By LANCE E. DAVIS, JONATHAN R. T. HUGHES, AND DUNCAN M. McDOUGALL. Homewood: Richard D. Irwin, Inc., 1961. Pp. xiii, 408. \$7.50.

The authors have pioneered an intriguingly different approach to an area of economics which has, in many schools, been relegated to a secondary position in the study of economics. Here is a well-written, one-semester text which aims to put the study of U.S. economic history back where it belongs—in “the core of the study of economics” (p. vii). This text is a teaching vehicle, and even a casual survey of the book emphasizes the fact that “it is apparent that the teacher of this book will need somewhat more sophistication in both the worlds of history and economics than is required by many economic history textbooks” (p. vii). In those schools where economic history is taught in the history or social science department, or where it is handled by an economist not trained in history, this book would not, in the reviewer’s opinion, be a wise choice as a text.

The authors make no attempt to present a chronological survey of the development of America from colonial times to the present. In fact, the colonial period is not covered except to the extent necessary to prepare the stage for analysis of specific economic phenomena. As stated in the preface (p. vii), “We have tried to make possible a more general use of the materials of economic history by relying upon the use of simple economic analysis to explain the main patterns of America’s economic development since the early nineteenth century.”

The theoretical background for the study of economic development is provided in a section on the allocation of resources in a free-enterprise system. Here the student is introduced to marginal analysis, since it is assumed that this text will be used “as the basis of the first course in economics” (p. vii). Income accounting and income distribution are sketched to give a foundation for much of the analysis of forces aiding in the development of the United States. Classical dynamics and the neo-Keynesian growth models are presented, followed by a description of the fluctuations in economic activity in this country.

Having erected the framework around and into which economic activities may be placed, the authors examine in separate sections the economic areas which to them constitute the main stream of economic development in the United States. No attempt is made to correlate time periods between these areas. However, where time relationships are necessary or aid in the analysis of a sector the chronological periods are established. The place of the demographic variable is well presented, although those economists stressing labor union development will not find an exhaustive treatment of that topic. De-

velopment of the demographic sector always brings about a shifting of responsibilities in the public sector. Hence, government control of business as well as the role of government as a source of investment capital is described.

In the treatment of the development of savings and investment a good job has been done in sketching the ways and means used in this nation to accumulate the necessary capital to mobilize our resources. To the reviewer, however, this section lacks sufficient coverage of the monetary system, and the banking system is not treated in sufficient depth to give a beginning economics student a rounded foundation for relating pricing and the capital market. The authors justify their approach to the discussion of the development of the monetary standard by saying, "We have done this because of our concentration upon economic rather than social and political aspects of the nation's growth and development" (p. 216).

Logically following the study of capital accumulation is a section on geographic expansion, market expansion (both domestic and foreign), and transportation development. The structural changes in industry and agriculture, resource bases, and technological improvements are presented in separate chapters. In these chapters the emphasis is upon an analysis of changes in the sector being presented with a minimum of descriptive material and/or the chronology found in the usual presentation of such developments. In a closing section the U.S. experience in economic development is summarized, and is followed by an excellent discussion of the difficulties, in fact impossibilities in most cases, of trying to fit or force any pattern of economic development into the existing economic framework of an underdeveloped economy.

Here is a delightfully different treatment of a vital area of economics. The book's usefulness as a text depends upon the quality of the instructor, the level of the course-offering, and the placing of the course in the economics curriculum. If used as the authors suggest it should be excellent; if circumstances or desired results are different from those mentioned, it is suggested that a "standard approach" text be used.

JOHN W. CHISHOLM

Louisiana State University

Programas de estabilización económica en América Latina. By G. A. COSTANZO. México: Centro de Estudios Monetarios Latinoamericanos, 1961. Pp. 143.

Mr. Costanzo's theme in this series of lectures is that internal and external disequilibrium are barriers to economic development. The principal kind of internal disequilibrium in which he is interested is inflation. External disequilibrium is defined in market terms as a payments deficit causing a loss of reserves or requiring the government to depreciate, impose exchange of import controls, or to acquire short- or medium-term loans abroad. Unlike Nurkse he does not include a full-employment criterion. Internal disequilibrium (inflation) is the most important cause of balance-of-payments problems in underdeveloped countries, and its magnitude is measured by the balance-of-payments problem.

Inflation originates with the creation of credit by the central bank usually at the instance of a government that lacks the fiscal resources to pay the costs of its development schemes. In addition it must, in the usual case, finance the deficits of state-owned enterprises, e.g., the Argentine and Brazilian railroads and Bolivia's *Corporación Minera*.

Costanzo estimates the quantity of money that the central bank of a "typical" Latin American country can create without raising the price level would be 1 per cent of national income if the national income were growing at the rate of 5 per cent per year. The basis of this estimate is the fixed relationship that is alleged to exist between the quantity of money and money income in these countries.

The argument with respect to the consequences of inflation is cogently stated though scarcely novel. Inflation redistributes income to some businessmen and reduces the real income of workers without raising the level of private saving since luxury consumption by the beneficiaries is encouraged. Investment is distorted. And, worst of all, foreign capital is discouraged from entering the country.

The analysis is quite general; it is intended to apply to all underdeveloped countries whatever their particular kinds of economic institutions or stage of development (with the exception presumably of planned socialist countries). Qualification of the argument by reference to different situations is entirely lacking and the case studies used in illustration include economies as dissimilar as those of Argentina and Bolivia.

The point of view is that of the IMF, of which the author is a high official. It will not convince those who argue that the prescription of balanced budgets and central bank restraint is trivial for countries desirous of development but possessing fundamental defects in their economic institutions. Furthermore, they might contend, it is possible for the central bank to become an active agent in accomplishing changes in structures prior to a period of growth—but with some inflation as a consequence. The policies of the Bank of Mexico in the Cárdenas period are a case in point.

The studies of specific countries (Argentina, Bolivia, and Paraguay) are taken as instances of recent monetary stabilization after prolonged inflation. In each case the inflation was accompanied by a failure to achieve much in the way of growth and, if it is yet too early to tell whether stabilization will be followed by growth (and continuance in political power of Señores Frondizi, Paz, and Stroessner) at least Costanzo sees many hopeful signs—particularly the gain in their foreign exchange reserves.

These brief studies are the best part of the book even though one cannot avoid thinking that the failure of the Perón regime had a deeper basis than monetary imprudence. Here is an excellent technical account of the various devices by which monetary restraint was imposed. It must have been of particular interest to the central bank technicians to whom these lectures were originally directed.

ROBERT R. EDMINSTER

University of Utah

Statistical Methods; Econometrics; Social Accounting

Statistique et observation économique. By ANDRÉ PIATIER. Volumes 1 and 2. Paris: Presses Univ. de France, 1961. Pp. 972. NF 20; NF 22.

The author of this excellent work is *agregé* (lecturer) in the Facultés de Droit et des Sciences Économiques in Paris, also professor at the Ecole Pratique des Hautes Etudes. He has produced an outstanding introduction to statistics and econometrics for students of economics. The book is a text for third-year students of *licence*. (This corresponds roughly to our MA degree.)

The first part of the two-volume work discusses methodological questions. A short chapter deals with the history of economic thought, another with the history of statistics. Chapter 3 treats the part of mathematics in economics. In Chapter 4 the author gives his views on some specific questions like causality in economics, economic laws, the subjective view, etc.

The second part deals with statistics proper. There is an account of censuses, the administration of statistics, sampling, and the organization of statistics. There are also chapters on central value, dispersion, and index numbers. In the latter one misses, especially in a French book, a treatment of the outstanding contribution of F. Divisia to the theory of index numbers, which is fundamental to much later work. Another chapter deals with errors, graphical methods and presents the usual ideas connected with time series. There is also a short chapter on correlation and regression along conventional lines. A very short account of probability theory is followed by a discussion of the usual statistical distributions (binomial, normal, Poisson, log-normal). The last chapter in Volume 1 deals very briefly with significance tests and related matters.

We find in Volume 2 a very competent and modern discussion of econometrics. The author starts with the construction of econometric models, then follows up with a short presentation of the principles of micro- and macro-economics and aggregation. One misses here the discussion of the ideas of H. Theil on linear aggregation, which would fit in very well with the elementary account given in the book, and a mention of the important contributions of the French school of econometricians to the aggregation problem (Roy, Nataf, Malinvaud, etc.).

The second chapter brings a discussion of static and dynamic models and the introduction of stochastic elements (shocks). There is a short section on multicollinearity, which uses Frisch's confluence analysis, another on identification and the estimation of parameters. Starting from the classical method of least squares the author presents the method of simultaneous equations (Cowles Commission) and recursive models (Wold).

Perhaps the most interesting chapter is the third, which exhibits some results of econometric research. Early work by Gini (1910) and Lenoir (1913) is mentioned, as well as the work of H. L. Moore and Henry Schultz. There is a most interesting account of the econometric analysis of mail services in France, 1873-1936, by E. Morice. The author next presents a short account of work by J. Milhau on the demand for wine in France, 1919-1933. There is also the description of a study by M. Brichler on the demand for

rail travel in France, 1921-36. After a discussion of point and arc elasticity of demand the author proceeds to Engel curves. Results in various countries are here compared with income elasticities for several commodities derived from French data by J. Benard, L. Goreaux, J. Voranger and others.

American investigations of the demand for automobiles are compared with similar studies by H. Faure and J. Maurice for the French automobile market 1927-1938. There is a short account of the study of C. Fourgeaud on metropolitan traffic in France. The author also presents the study of M. Verhulst and D. Fourgeaud on the French flax market 1946-1952.

The following part of the book treats business cycles and business barometers. There is a short account of business cycle theories, the cobweb theorem, acceleration models, and multipliers. The model by Frisch (1931) is briefly discussed. There follow sections on the models by Lundberg, Metzler and Modigliani, Samuelson, Harrod, Hicks, and Smithies.

This theoretical chapter is followed by an empirical one. Hanau's econometric model of the pork cycle is discussed, and some empirical results of Tinbergen's investigations of business cycles are presented. Various results on the consumption function in the United States by several authors are given. The large models for a whole economy by C. Clark, L. R. Klein and R. Frisch are shortly described.

The next chapter deals with business cycle tests and presents most interesting materials. There follows a section on macroeconomics. National accounting is most thoroughly discussed. The role of the government is stressed which is particularly important in France where many industries are nationalized. There is an interesting chapter on the comparison of Western and Soviet economic budgets. The book ends with a short but competent presentation of Leontief tables and their applications. The usual statistical tables are included in the book.

The reviewer concludes that this is a most competent and useful introductory text. He finds it superior to any introductions to econometrics or texts in economic and business statistics in English that he knows. It would be very desirable to have this book translated into English, especially because it presents much of the excellent empirical econometric work in France which is not easily accessible.

GERHARD TINTNER

Iowa State University

Primenenie matematiki v ekonomicheskikh issledovaniyakh. (Application of Mathematics in Economic Investigations.) Edited by V. S. NEMCHINOV. Moscow: Sotsekgiz, 1959. Pp. 486.

The greatest significance of this collection of essays lies in its physical existence, in the fact that it was published. For, appearing under the editorship of a full member of the Academy of Sciences, it constitutes an official announcement that the use of mathematics in economics need not be anti-Marxist and, indeed, is even to be encouraged in a socialist society. This change in policy may, in a few years, make quite a difference in the quality

of Soviet economic literature. In fact, its influence can already be noted in the current journals and books, including a second volume of the present work which has just appeared.

In his introductory chapter, Nemchinov admits that "among our economists there is a certain rather strong prejudice against the application of mathematical methods in economics" (p. 7). It is, he explains, a reaction against the Austrian marginal-utility and the Anglo-American econometric schools' use of mathematics to promote "their pseudoscientific, apologetic conceptions." With responsibility for the shortcomings of Soviet economics thus placed on the West, Nemchinov turns to establishing Soviet priority in the fields of input-output and linear programming. Though these claims unduly magnify the importance of Russian contributions compared to that of Western work, they are far from groundless. The more the reader is impressed, however, with the promise shown by the early Soviet work, the more appalling becomes the fact that it was allowed—not to say compelled—to remain undeveloped for twenty or more years.

Soviet priority in the field having been established, the rest of the book settles down to business. Over one-third is devoted to a paper by V. V. Novozhilov, "Measuring Inputs and their Results in a Socialist Economy," which will be discussed below. It is followed by a translation of Oscar Lange's paper, "Some Observations on Input-Output Analysis," which appeared in *Sankhyā* in 1957. L. V. Kantorovich's 1939 paper which is the basis of Soviet priority claims in linear programming is reprinted. It has been translated in *Management Science*, July 1960. A new Kantorovich paper follows which surveys the possible applications of linear programming. The book is completed by two papers on the transportation problem, one on the mathematics of linear programming, one on numerical methods for linear programming, and an annotated bibliography prepared by A. A. Korbut. The numerical methods paper, by G. Sh. Rubinshtein, presents several methods very concisely and suggests at least one novel modification of the usual procedures (p. 454).

Novozhilov's paper might be more descriptively entitled "Determining the Socially Necessary Labor Value of All Inputs." "Many economists," he observes, "suppose that the measurement of inputs does not require higher mathematics" (p. 131). But in fact, finds Novozhilov, because a minimizing problem is involved, so is higher mathematics. The economic problem of the communist society, as he sees it, is to minimize the total labor necessary to secure the "planned accumulation" of capital and the "program of production of final outputs" (p. 165), given available resources and technologies. We are assured that the treatment of consumer demands as known restraints is appropriate under communism. For when, "because of the high level of labor productivity, distribution comes to be according to needs, then for many products the output can be calculated from scientifically based norms of consumption" (p. 165n). The minimization of total labor required is accomplished iteratively. First, "tentative norms of effectiveness" are established for each means of production. Novozhilov identifies these norms of effectiveness with Lagrangean multipliers, the so-called shadow prices of

linear programming, but he avoids the word "price." Using these norms, the "differential [labor] input" of each process for producing each final output is computed just as we would compute the cost of the process. For each product the process with the smallest differential input is chosen, and the total utilization of each factor is computed and compared with the amount available. The norms of effectiveness are revised upward for factors used in excess of availability and downward for those not fully utilized. The process is continued until no further revision is necessary, whereupon the optimum has been found. The names are strange, but the process is very familiar. In the modification of the "communism" model for "socialism," the word "price" begins to appear, and consumer requirements are determined by "collective regulation."

Though the recognition that economics involves minimization and maximization and that these involve mathematics seems a bit belated in Soviet economics, it has at last been achieved. A beginning has been made, and it may well prove to be an important one.

CLOPPER ALMON

Harvard University

Procjena nacionalnog bogatstva po područjima Jugoslavije. (Estimate of National Wealth of Yugoslavia by Areas.) By IVO VINSKI. Zagreb: Ekonomski Institut NR Hrvatske, 1959. Pp. iv, 282.

Dr. Vinski has been devoting most of his time since 1953 to the problems of estimating national wealth of Yugoslavia and its various areas. His first major publication in this field was *Nacionalno bogatstvo Jugoslavije* (National Wealth of Yugoslavia), Zagreb 1957, an extract of which was published in the International Association for Research in Income and Wealth volume, *Income and Wealth*, Series VIII, pp. 160-92. In this study he presented his methods of estimating national wealth and the basic source material, the estimate of wealth of Yugoslavia as of the end of 1953, and an estimate of the growth rates of national wealth in 1953 and 1954. Using the same methods and considering the specific conditions in various areas he then undertook the pioneering job of estimating—as of the same dates—the national wealth and the growth rates of Serbia (with the autonomous regions of Vojvodina and Kosmet), Croatia, Slovenia, Bosnia and Herzegovina, Macedonia, and Montenegro, and presented his results in the book under review. Furthermore, Vinski presented in a communication of 1959 to the Yugoslav Statistical Society an estimate of fixed assets for Yugoslavia for the period 1946 to 1958. Later in the same year he submitted to the Sixth European Conference of the IARIW estimates of "National Product and Fixed Assets in the Territory of Yugoslavia, 1909-1958."

In estimating the national wealth of Yugoslavia by areas as of the end of 1953, Vinski uses the direct estimate approach. For the estimates of growth rates of national wealth for 1953 and 1954 and for the estimates of national wealth in other time periods he uses Goldsmith's perpetual inventory method. He consistently anchors his estimates in 1953 and expresses them in 1953 prices.

The principal source materials for Vinski's estimates of national wealth were censuses of fixed assets in both the socialist sector of the economy and in the public health services carried out between 1953 and 1955. The censuses showed both the new replacement value and the depreciated value of fixed assets at prices established by a government commission. Since these censuses covered only about 30 per cent of the total wealth, Vinski estimates the remainder of the reproducible wealth and the value of land on the basis of a mass of other information, which he uses with great ingenuity. Rates of growth of national wealth in 1953 and 1954 were obtained from official data on investment and depreciation in the socialist sector, complemented by Vinski's estimates of these magnitudes for the private sector.

The study here reviewed shows in a systematic quantitative fashion for the first time the great differences in the structure and the level of economic development among various people's republics and autonomous regions of Yugoslavia. Thus the index of per capita reproducible wealth (national average 100) in new replacement value in 1953 is estimated at 45 in Kosmet, 62 in Macedonia, 74 in Montenegro, 80 in Serbia and in Bosnia and Herzegovina, 117 in Vojvodina, 126 in Croatia, and 185 in Slovenia (p. 40). On a depreciated value basis the indexes are somewhat higher for the first five areas and lower for the latter three. This difference is caused by the relatively lower rates of investment between 1945 and 1953 in the latter areas. Vinski ascribes these great differences in the per capita wealth by areas primarily to the differing historical background of various areas, although a certain role is attributed to the differing natural resource endowment.

Postwar policy especially favoring economic development of Yugoslavia's own less developed areas tends somewhat to reduce the inherited differences in the per capita reproducible wealth. Thus the growth of fixed assets in 1953 was 4.5 per cent for the country as a whole, while for the people's republics it was as follows: Serbia 2.3, Croatia 2.8, Slovenia 3.2, Bosnia and Herzegovina 11.1, Macedonia 11.6, and Montenegro 21.3 per cent (p. 55). As a consequence of the feverish investment activity during the postwar period, the regional composition of fixed assets and their average age has undergone profound changes.

Fundamental changes have also taken place in the ownership of assets. With the exception of rural and small urban residential buildings, agricultural and handicraft tools, livestock, and other agricultural inventories, practically all reproducible wealth has been socialized. However, even when wealth has remained in private ownership, as did about 90 per cent of agricultural land, changes in the institutional and political framework of the economy have exerted pronounced influence on the value of wealth according to kind and sector of ownership. This, in turn, affects the over-all value composition of total national wealth. Here is the most outstanding example: while the prices of reproducible wealth have risen between 1938 and 1953 on the average 18.7 times, the prices of agricultural land have risen only 6.5 times, and of urban land in centrally located parts of cities only 2 times. Low prices of urban land were due partly to the fact that rents were controlled and kept on a symbolic level and partly due to the fact that nationalization of urban land was expected and actually soon carried out.

The whole field of the quantitative analysis of national wealth and its growth is relatively new and its procedures are not standardized. The dependability of estimates can be only as good as the underlying data and the perspicacity of the man undertaking them. It would be a miracle if Yugoslav statistical and other economic information, which are not characterized either by completeness or great original reliability, were capable of providing Vinski with sufficient data for estimates of national wealth to which no exception could be made. But to probe into single estimates one by one it would be necessary to evaluate all of the underlying source material. Actually Vinski himself has been eager to revise and to improve his estimates, e.g., in regard to the valuation of agricultural land and the handling of depreciation, as new information becomes available or a different method of estimation becomes advisable.

When Vinski ascribes the great differences in the per capita wealth by regions primarily to varied historical background of these regions, in my opinion he does not pay enough attention to the differing rates of population growth in the various regions as a basic factor affecting the per capita level of national wealth in 1953. In view of the fact that, for example, the population of Bosnia and Herzegovina rose between 1880 and 1953, according to the figures of the Yugoslav population expert Macura, by 146 per cent and that of Macedonia by 119 per cent, while that of Slovenia rose by only 35 per cent, the population factor plays a key role. Since population continues to grow in various areas at vastly different rates, the population factor and the policy of the government to speed relatively the development of less developed areas play a basic role in the contemporary rates of growth of both reproducible wealth and of real per capita income in various areas. In a multinational state like Yugoslavia, these matters have not only economic but also far-reaching political implications.

Even if subsequent revisions and refinements of Vinski's estimates should indicate that his present estimates are off by a substantial margin, his work is of a pioneering nature and will serve as basis for any further development in national wealth studies in Yugoslavia. For its wealth of information and the light that it throws on the Yugoslav economy, the book under review will be greatly appreciated by all those interested in the development and the changing structure of the Yugoslav economy as a whole, and of its specific regions in particular.

JOZO TOMASEVICH

San Francisco State College

Economic Systems; Planning and Reform; Cooperation

Ogólne problemy funkcjonowania gospodarki socjalistycznej. (General Problems of the Functioning of the Socialist Economy.) By WŁODZIMIERZ BRUS. Warsaw: Państwowe Wydawnictwo Naukowe, 1961. Pp. 353.

Model building, it appears, is not a monopoly of Western economists. The volume under review is an outcome of a relatively short-lived but at times quite lively discussion in the years 1956-1957 concerning the model of the Polish economy. The author, a professor of economics at the University of

Warsaw, was one of the the most prominent protagonists in the debate. His book represents a summary of his views with regard to the functioning of the socialist economy in general and is not confined exclusively to Poland.

The major part of Brus's book is devoted to the discussion of two basic models of the socialist economy: the centralized model; and "the model of a planned economy with the application of a market mechanism," which the author simply calls the "decentralized model." The difference between them lies in the decisions which every socialist system has to make. According to Brus there are three major categories of such decisions: the macroeconomic ones which form the prerogative of central planners; decisions concerning individual consumption and employment which, as a rule, are solved through the market; and the third category which Brus defines as "current economic decisions" and which pertain to such problems as the volume and structure of inputs and outputs, the choice of sources of supply and direction of sales, forms of workers' remuneration, and others. In the opinion of the author, models of the socialist economy can differ only according to whether the third category of decisions is made by central planners or by enterprises. It may be added that for the purpose of his argument Brus assumes the absence of a private sector in the economy.

Brus's description of the centralized model, although interesting, does not introduce any new elements except as he stresses the active role of money in the market for consumer goods and labor, as opposed to its role in the relations between the planners and enterprises and among the enterprises themselves. In connection with the latter he criticizes frequent attempts to justify the low level of prices of machinery and equipment as necessary for stimulating technological progress under socialism. According to him, such reasoning has no place in a situation where capital is allocated centrally and the enterprise is indifferent about cost. Altogether "the centralized model' is characterized . . . by a deep mistrust for money accounting which is treated as being too general, anonymous, nonindividualized, and hence not providing an adequate picture of gains and losses from the viewpoint of the planners."

Brus has little use for the centralized model. He criticizes it in the accepted fashion (lack of elasticity of output, absence of proper cost accounting, elimination of the initiative of individual enterprises, and growth of bureaucracy). However, the major objection to the model voiced by him and by other Polish economists in the past concerned its failure to take into account the role of the law of value in the socialist economy. Consequently Brus proceeds to discuss in detail the working of the law under both static and dynamic conditions. His main purpose is to provide a strict definition of the extent to which the law of value operates under socialism. He defines the law as the tendency of price relations to conform to value relations, and in this connection he criticizes those among the Soviet economists who claim that the law of value is utilized when prices are set which do not correspond to their respective values. Obviously, the planners often set prices well above or below average costs. What Brus objects to is calling this "planned utilization of the law of value" while, in fact, the law is being disregarded.

In the author's opinion, the law operates in static conditions within the

framework of planners' preferences, and any allocation of resources contrary to it represents a departure from the optimum. It is not fully valid under dynamic conditions since in making autonomous investment decisions the planners must take into account the various capital-output ratios and technological improvements in addition to the criterion of profitability. Brus believes that equalization of the rates of profit can serve only as a supplementary factor within the limits drawn up by the development plan, and cannot influence the choice of the latter. Furthermore, investment decisions should not be subordinated to the currently existing structure of the economy, subject to the law of value operating today, but should take into account the "perspectivistic aspect" of the law and the economic structure of tomorrow. Consequently, Brus arrives at the conclusion that the extent of the working of the law of value under socialism is restricted by the presence of planners' preferences, particularly in the field of investment.

After this excursion into the realm of theory, or what he calls "the analysis of the substance of resource allocation," Brus goes back to his model building, discussing the forms of allocation within the decentralized model. He emphasizes at the outset that the use of a market mechanism in the allocation of resources is not, in theory, opposed to the premises of a planned economy, and the decision as to whether the market or the direct orders are finally to be chosen for the purpose of allocation should be on the basis of their usefulness as tools for the planners. For the latter, Brus reserves all "direct" decisions concerning the distribution of national income and the allocation of investment funds among various sectors of the economy. All other decisions are to be made by the enterprises which are, in turn, influenced by "indirect" planners' preferences concerning taxes, depreciation allowances, prices and wages. In the author's view the Yugoslav system corresponds most closely to the decentralized model and since that system has been discussed in great detail both in Poland and elsewhere, only the broader aspects of the model are analyzed.

Brus clearly favors the decentralized as compared with the centralized model. He sees the main advantages of the former in its ability to achieve a higher degree of adaptability of supply to demand, and a more rational allocation of resources than in the case of the latter. In his opinion the decentralized model can provide for a "balanced growth" of the economy by way of eliminating or reducing some of the most glaring disproportions, and it frees the planners from the necessity of making numerous detailed decisions, thus enabling them to concentrate on the more important problems. Brus rejects the standard objections to the application of the market mechanism, most of which deny the possibility of setting up a system of flexible equilibrium prices. So long as scarcity relations are taken into account, there is no reason why the planners could not come up with a rational price system, particularly at the present stage in the application of mathematics to economics.

It may be added that while Brus concentrates on the economic sides of the decentralized model he does not ignore its social aspects. He emphasizes the democratic character of the model in which individual and collective interests

coincide. This, among other things, is what makes the decentralized model realistic and thus preferable to the centralized model which, by and large, chooses to ignore the individual.

The discussion of the two models is preceded by a short history of the development of socialist economic doctrines, starting with Marx and ending with the Bukharin-Preobrazhenski controversy. As is to be expected this particular chapter met with enthusiastic response in Poland where some of the reviewers hailed it as "the first attempt in the Marxist literature to restore to socialist economics its own history."

This short review does not do justice to Brus's book. Although in places, particularly in discussing the law of value, the author does not avoid falling into the pitfalls commonly associated with discussions of this kind, he steers clear of the pseudo-dialectics which characterized the Soviet debates after 1956. He is well acquainted with the Western literature on the subject, he is not above acknowledging his own past errors, and he is not afraid to engage in controversy. Altogether Brus's book must be considered an important contribution to our knowledge of the working of the socialist economy and as such it well deserves to be translated into English.

ANDRZEJ KORBONSKI

Columbia University

Business Fluctuations

Business and Economic Forecasting. By MILTON H. SPENCER, COLIN G. CLARK, AND PETER W. HOGUET. Homewood: Richard D. Irwin, Inc., 1961. Pp. xii, 412. \$7.95.

This is a book "... designed to meet the needs of students, consultants and professional researchers who are interested in the related areas of forecasting and model building." The authors are almost exclusively concerned with the construction of regression models and the use of such estimated models to make forecasts. The only method explained of estimating the unknown parameters of regression models is the graphical method so that anybody with a knowledge of high school arithmetic can understand the mathematical aspects of this book. This desire of the authors to expound a highly technical subject in simple terms causes the book to be much longer than would otherwise be necessary and probably decreases the usefulness of the book to consultants and professional researchers.

Part I (90 pages) discusses forecasting methods, materials and tools. It also includes a twelve-page appendix on the use of logarithms. Various methods of forecasting such as naïve methods, leading series, and sample-surveys are briefly discussed but rejected in favor of the regression method of forecasting. The graphical method of estimating the parameters of multiple regression models is also explained.

Part II (268 pages) presents the data and the estimated regression equations for the following variables: prices (farm commodity prices, prices of raw materials and semimanufactured goods, metals, fuels, interest rates and common stock prices); sales of consumers' nondurable goods (gasoline, beer,

and women's outerwear); sales of capital goods (electrical equipment, machine tools, and oil-well drilling bits); and sales of construction materials (plywood, Portland cement, iron products, steel products, and plumbing fixtures). No attempt is made to evaluate how well these models forecast, indeed no forecasts are made, but rather a graphic comparison of the estimated model and the actual model for the observation period is given. It should be pointed out that the models presented are for expository purposes but my complaint is that they shed little light on the topic of forecasting although they do illustrate some of the principles of model construction.

Part III (37 pages) presents a simple, but lucid, discussion of multi-equation (simultaneous and recursive) regression models and illustrates the topic with a comparison between the Klein-Goldberger model and the Econometric Institute model of the United States. This part might prove useful as an introduction to the topic of multi-equation models in an econometrics course.

The major defect of this book stems from the desire of the authors to hold the level of discourse at a very elementary level. This means that approximately only one page is devoted to a discussion of the essentially stochastic nature of regression models. This in turn means that the sampling variation inherent in such models and in forecasts from such models is not discussed, even to the extent of presenting estimated variances of the estimated parameters. This lack of emphasis on the stochastic nature of regression models also makes it difficult for the authors to present criteria by which one can decide whether a forecast is "good" or not. They seem to regard the ability of a model to predict a change in direction (a turning point) as of primary importance while, in fact, one can easily construct reasonable examples where one would prefer a model which predicts no turning points to one which predicts all turning points.

If this book is regarded as an elementary exposition of regression model construction and of many interesting estimated models then I would give it a high grade, but as a book on forecasting it is somewhat less satisfactory.

JOHN W. HOOPER

Cowles Foundation for Research in Economics
Yale University

Economic Fluctuations and Forecasting. By EDWARD J. CHAMBERS. Englewood Cliffs: Prentice-Hall, 1961. Pp. xv, 649. \$7.50.

This is a well-organized, clearly written textbook dealing with economic changes and their impact on growth, stabilization and price stability in Western countries. Empirical and theoretical work of recent years has provided some new insights into the interrelationships between the three goals of national policy and is a principal reason for the book. In an environment of notable structural and institutional changes, the focus of interest lies in the nature of these developments and their implications for public policy. A section on forecasting is included because successful programs for stabilization or growth stimulation depend largely on accurate assessments and projections.

The organization of the book is almost identical with that of the 5th edition of Bratt's *Business Cycles and Forecasting*. Part I includes a description

and analysis of fluctuations—secular, cyclical and seasonal. Part II is a highly condensed version of U.S. business cycle history since the First World War. Part III is concerned with the theory of business fluctuations, based on the income-expenditure approach of Wicksell-Robertson-Keynes. Part IV discusses aggregative economic forecasting in very general terms; and finally, Part V investigates public policies, in the light of existing complexities and conflicts. Two short appendices on Social Accounting and Business Indicators follow.

Compared with the empiricism of Bratt, the present book is far more theoretical and eclectic. It would appear to have been written for upper classmen and first-year graduate students. The author is scholarly and careful, refusing to take a stance on many economic questions. For example:

To take either extreme position, that is, that cyclical fluctuations represent purely random or outside disturbances or, alternatively, that the oscillation of aggregate economic activity is self-perpetuating, occasioned by the peculiar structure of our business system, is unrealistic (p. 301). The precise way in which decisions are reached is still a mystery. Presumably, however, there is a balancing of pros and cons based upon relevant past experiences, the current situation and expectations (p.297).

An affinity for the approach of the National Bureau of Economic Research is revealed, attested by extensive quotations in support of various propositions (e.g., Arthur Burns is referred to 22 times). Yet, there is a curious lack of quantitative material—the book dwells on description and theoretical discussion touching only lightly on empirical analysis and techniques.

The sections on policy reflect the author's conservative political philosophy:

A program that respects the traditional but not inflexible boundaries between the Federal and State governments is fully in consonance with American political institutions. A program that is an excuse for increasing the centralization of political power is not (p. 416).

The author's style and content suggest that he has read widely, understands his material thoroughly, summarizes and relates it clearly, but that he has done a limited amount of individual analytical or forecasting research. He doesn't appear to appreciate the problems of forecasters—overlooking not only the problems of extensive data lags but the unreliability of preliminary estimates (particularly in some strategic areas such as business inventories). He certainly underplays the role of bank credit flowing to and from the stock market, affecting business turning points. He offers standard prescriptions for dealing with difficult problems, including the usual wage-limited-to-productivity-increase method of dealing with "cost-push" inflation, when those working in the field know the great difficulties in measuring productivity, and estimating the contribution of nonlabor inputs.

A process of selecting and summarizing what has already been written is useful but sometimes offers few operational principles of policy. Does the author realize the role of forecasting errors in the Eisenhower and Kennedy deficits, in connection with the following conclusion?

Whether the institutional changes of the past two decades will require

the invention of new stabilization instruments can be better judged only after we have really tried to harness fiscal-monetary devices in a working relation, for the blunt truth is that we have failed to coordinate them in the postwar period (p. 546).

Does he recognize the operational difficulties as well as possible contradiction with his own political philosophy when he approves John Dunlop's statement that "more leadership by the Federal Government is needed to deal with power blocs"? Surely moral suasion cannot be sufficient.

In my judgment, the strongest part of the book is the history of cycle theory; the weakest is probably the forecasting section (only 12 per cent of the book vs. 32 per cent for Bratt's), which does not fully develop a fundamental concept. While capital investment and consumer intention surveys, and NBER research are handled adequately (though for the latter only eight of the twelve current "leaders" are presented and analyzed), the greatest omission is an orderly development of the standard national income method of forecasting. While superficial treatment of forecasting methodology is consistent with the author's stated purpose, I believe a more complete coverage would have increased the possible uses of the text.

As constituted, it can be used in a business cycle and/or policy course, should a theoretical approach be desired. It is not as useful for a cycle-forecasting course, although it can be supplemented with something like Bassie, *Economic Forecasting*, for amplification of the national income method of forecasting. Actually, a combination of this book with Bratt's and Bassie's provides excellent material for the latter type of course. On balance, the text is a definite contribution, supplementing but not duplicating those already available in the field.

HARRY B. ERNST

Tufts University

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

The Postwar Residential Mortgage Market. By SAUL B. KLAMAN. Princeton: Princeton University Press, for National Bureau of Economic Research, 1961. Pp. xv, 301. \$7.50.

This volume is one result of the National Bureau's Studies in Capital Formation and Financing and concentrates on the supply of residential mortgage funds rather than the demand for mortgage funds. Primary emphasis on the supply of funds in the first postwar decade is appropriate to the then-existing environment. With housing demand exceedingly strong, the availability of mortgage funds was more of a determinant of residential construction than it has been in the past two years. Nevertheless, the forces generating mortgage demand even in the first postwar decade merit study if students of the market are to understand more recent and future developments. The author sets as the two major objectives for the volume a description and appraisal of (1) the flow of residential mortgage funds and (2)

the institutional framework of the mortgage market. The volume attempts more than these two broad aims suggest, and the achievements are commendable.

Klaman demonstrates that residential mortgages absorbed more funds than any other single capital market instrument, and in a number of years absorbed more than all other instruments combined. More importantly, his analysis examines in substantial detail the unusually heavy flow of funds into mortgages in the first half of the decade, particularly into federally insured or guaranteed mortgages. Klaman explores the decline of federally backed mortgages in terms of changing capital-market and monetary conditions. The emergence of the conventional loan as an instrument of increased importance and greater stability in volume during the second half of the decade is attributed to its greater yield flexibility. The author might have added that FHA mortgages, unless the borrower needed the more favorable downpayment and maturity terms, actually became a progressively less favorable instrument compared to high-grade conventional loans as FHA contract rates were increased, prepayment penalties were maintained, and processing periods remained rather lengthy. Generally, Klaman's treatment of the changing flow merits approbation. His investigation is objective and thorough and emphasizes the critical variables and policies influencing developments.

Interest-rate developments in the mortgage field are treated comprehensively and with full consideration of market forces and government policies. The author introduces a new series on interest rates for conventional mortgages and a detailed treatment of the relationship among rates on the several different types of mortgages. Some of his points, however, are subject to question. He seems to spend more space on the seeming lag of mortgage yields behind bond yields than the issue merits, particularly since the lag results to a large degree from the fact that mortgage yield data were collected as of the date loans were closed, rather than as of the commitment date. His conclusion that geographic differentials, already reduced substantially in the past quarter-century, cannot be narrowed further because of market imperfections may be too early a surrender. Finally, in evaluating the failure of discounts on FHA and VA mortgages to make them fully competitive with conventional loans, he overlooks the effect of the discounts on the willingness of builders to maintain a given pace of construction.

The most interesting and original parts of the volume for this reviewer are those dealing with policies, practices, and techniques of the various lenders. In each of these areas, the preceding findings are clothed in raiment essential to seeing the market as a functioning instrument. Klaman's treatment of primary and secondary markets is particularly commendable, though one wishes he might have analyzed the recurrent quest for a formal secondary market for conventional loans. The volume also provides a good discussion of junior liens in the postwar decade.

Though the quality of the work is generally high, a few characteristics of the volume merit special comment. The author avoids substantive policy issues. Little is said directly in evaluating the adequacy of the mortgage market or the needs of the periods. Certainly, those who take either side in

the controversy over the adequacy of the supply of mortgage funds in given situations will find that the author has turned his back on this issue. At one point (p. 111) the author raises the question of the wisdom of federal programs in the early postwar years. He concludes that the liberal loan-to-value ratios in VA and FHA loans inevitably contributed to a larger demand for mortgage funds, but the discussion of whether or not the programs were inflationary is left to others. Such issues may have been outside the scope of the author's assignment, but one can regret the absence of their discussion in an otherwise comprehensive volume. The reader may find the summary of findings, in Chapter 1, terse and cryptic. Points made by the author in that section are not cross-referenced to other sections of the volume, and the statements in the summary are difficult to relate, in some cases, to the evidence presented in subsequent chapters.

A few statements, involving verifiable facts, are open to question. Two examples follow: Klamann attributes a lower volume of mortgage acquisitions for savings and loan associations compared with banks or insurance companies in parts of the period to a "reduced inflow of savings" (p. 8). This statement is at least unclear in view of the record of savings and loan associations. Again with reference to savings and loan associations, he attributes a reduced fourth-quarter level of mortgage acquisitions to a seasonal rise in withdrawals (net savings decline) and a need to reduce indebtedness to Federal Home Loan Banks by the end of the year (p. 123). The statistical record supports neither assertion.

Despite these exceptions, the volume is a valuable contribution to capital market literature. Experienced students of the mortgage market will benefit from the assembly in one place of a comprehensive, systematic treatment of the supply side of the market. To the new entrant into this area, it will prove a very useful key to what may be seemingly enigmatic developments. The generalist in the capital markets can turn to the work for illumination of frequently beclouded problems and will find more integration with the capital market in general than the foreword suggests. Finally, while the author does not engage in explicit evaluation of some critical issues, his analysis of the phenomena underlying those issues provides the reader with a base for developing his own assessment.

HARRY S. SCHWARTZ

*Federal Home Loan Bank Board
Washington, D.C.*

The Control of Hire-Purchase. By F. R. OLIVER. London: George Allen and Unwin Ltd., 1961. Pp. 218. 25s.

A respectable number of scholarly books on consumer credit has accumulated by now. Since the pioneer work of E. A. R. Seligmann in 1927, we have had important contributions by Rolf Nugent, by staff members of the National Bureau of Economic Research (culminating in the Haberler study), by Reavis Cox and, finally, we have had the six-volume 1957 study sponsored by the Board of Governors of the Federal Reserve System. The present work, however, is the first major study by a British author, an understand-

ably belated development since consumer instalment credit, or hire-purchase in British terminology, has only recently become truly important in the United Kingdom (and even now is still far short of its relative importance in the United States, especially with respect to new automobile sales).

This study may be thought of as something of a British counterpart of the Haberler study, but it comes a generation later and thus utilizes more recent data, both for the United States and the United Kingdom (although data for the latter has apparently been utterly inadequate until very recently). It is an analytical study, with institutional description held to a minimum; and it moves rapidly from description to a discussion of motives for using hire-purchase and to the economic consequences of consumer credit: for example, the effects on savings and on the supply of and demand for goods. Long-term and short-term behavior of instalment credit, and interrelationships of instalment credit and the business cycle are examined. Next comes an analysis of the presumed gains to be obtained from employment of consumer credit controls. The final chapters deal with United States and British experience in the control of consumer credit, the implications of that experience and the preceding economic analysis, and some observations on the Radcliffe Report.

Although Oliver regards the pro-cyclical behavior of hire-purchase credit as largely caused by the cyclical behavior of income, he nevertheless finds a reciprocal relationship which he makes the basis for a defense of permanent consumer credit controls. He argues that the cyclical impact of consumer credit involves a transfer of demand to durable goods whose production is basically more volatile in character than that of nondurable goods. The effect is compounded by a pipeline lag in the production of such goods with a resultant multiplier effect. Between the dissaving induced by hire-purchase credit at time of purchase and the lag in repayments, Oliver finds a built-in amplifier of the cycle which requires control in the interests of greater economic stability.

Thus the author maintains that "subject to the need to show that controls actually work, there is an economic case for a regular pattern of controls which would serve both to limit booms and to mitigate slumps" (p. 153). He then proceeds to examine the admittedly circumscribed British and United States experiences, which, he holds, demonstrate reasonably well that hire-purchase controls via the mechanism of down-payment and (especially) maturity regulations do work. He concludes therefore that permanent and regular controls on down-payments and maturities are desirable. In this respect he takes issue with the Radcliffe Committee for preferring a very limited role for consumer credit control (and with the Federal Reserve Board of Governors for its opposition to such controls).

This work gives a concise description of the economic problems of consumer credit control. Since it contains and relies on recent United Kingdom data, it should be useful from a British point of view. From the American standpoint, it adds little to our understanding of the problem, mainly because it comes so soon after the recent massive Federal Reserve study. Analytically, it does not add significantly to existing literature and indeed may be viewed primarily as a restatement of the issues.

It is the reviewer's privilege to offer criticisms of a work, and this writer uses his privilege first of all to take issue with the author's neglect of the dynamic role of consumer credit in stimulating economic growth and in helping to transform the character of an economy. There is inadequate reference, in this reviewer's judgment, to the "mix" of monetary-fiscal controls. For example, considerable attention might be given to the relationship between debt management and the behavior of consumer credit. Thus an argument may be made for the use of hire-purchase controls as an instrument to be coordinated with debt management policy. The author might have enlivened his work considerably had he considered the experience of countries other than the United Kingdom and United States. Indeed from some points of view the experience of countries other than the United States would be more relevant to the United Kingdom experience since there is greater similarity between the economies of some of these countries and that of the United Kingdom with respect to the emerging roles of consumer durable goods and consumer credit. In conclusion, although this work serves a useful purpose at this time, a definitive British effort in this field must still be awaited.

ERVIN MILLER

University of Pennsylvania

Bases analíticas de la política monetaria. By BRUNO BROVEDANI. Mexico: Centro de Estudios Monetarios Latinoamericanos, 1961. Pp. 144.

This small volume, another in the series published under the auspices of the Latin American Center for Monetary Studies, sets forth a highly useful analytical framework for dealing with the monetary problems which are more or less peculiar to the world's underdeveloped areas. Based on lectures which the author (an economist with the International Monetary Fund) delivered in 1960 at the Center, the analysis is simple throughout, as perhaps befits a work directed mainly to the needs of Latin America's budding central bank technicians.

The author deals successively with the nature of central and commercial bank data; the system of monetary equations into which such data are fitted; the credit multiplier in both theoretical and empirical terms; Latin America's foreign exchange system; seasonal, cyclical and trend factors; expectations relevant to credit policy; and policy formation per se. Most categories are illustrated, at least briefly, with data from more or less representative Latin American sources; and wherever possible the analysis appropriately emphasizes relevant balance-of-payments features.

On the critical side, this reviewer has only a few doubts to express. Thus, is it correct to state that the quantity equation is useful only in instances in which supply is infinitely elastic and velocity constant? (pp. 15-16). Is this not also an instance of the tendency to overlook distinguished and relevant non-Keynesian analysis? Reference is made chiefly to the work of Arthur Marget. We are also told that the market rate of interest has little effect in limiting the demand for credit under Latin American conditions (p. 60). Is demand really that interest-inelastic, or, putting it differently, are the necessary conditions as generally prevalent as such a statement implies? Regarding Latin America's automatic stabilizers, Brovedani views

official programs for purchasing and selling exportable surpluses as no less stabilizing than, say, the progressive income tax (p. 91). But are these two types truly coordinate? Surely the relative size of the exporting country's shipments, coupled with the official price at which operations are conducted, have a lot to do with the claimed stabilizing role.

Among central bank powers, the discount instrument is regarded as fundamental and primary (p. 124). But if this is the case it is only, or largely, because Latin American nations almost without exception lack a developed capital market and thus the central banks are deprived of the opportunity to employ tools which top the list of powers found in the really advanced countries. This point is of some moment to Brovedani's over-all argument on strictly technical grounds, and in addition is significant relative to the general problem of economic development in that it illustrates an important condition, given other requirements as well, under which numerous, gain-minded economic rationalizers are at work to speed economic growth.

Finally, since monetary policy is but a part of economic public administration, it is a pity that the author failed to emphasize the weak state of public administration south of the Rio Grande and the implications, in terms of the desire for headway under free institutions, for public action by technically capable people in various operating areas, including the monetary.

VIRGIL SALERA

Alameda State College

Public Finance; Fiscal Policy

The Growth of Public Expenditure in the United Kingdom. By ALAN T. PEACOCK AND JACK WISEMAN. Princeton: Princeton University Press, 1961. Pp. xxxi, 213. \$5.00.

The authors of *The Growth of Public Expenditure in the United Kingdom* have produced an interesting and informative study but one whose title is somewhat misleading. The book does include data on expenditure growth, but its primary purpose seems to be the testing of certain hypotheses about the reasons for such growth and the time pattern it exhibits. However, there are plenty of statistics for those whose interest is primarily quantitative.

The authors attempt to develop a general theory to explain for this century why sudden jumps in peacetime expenditures have followed periods of war, while rate of growth in interwar periods has been relatively low and stable.

The reader who is in a hurry or impatient with columns of figures can profitably confine himself to the exceptionally well-written Introduction and Summary. In this section, the important concepts are defined and their derivation explained, and they are then woven into a theory of public expenditure growth, or, more accurately, a theory explaining why public expenditures grow by fits and starts.

The authors argue that wars produce "displacement effects," i.e., upward shifts in the levels of both revenues and expenditures which persist after the wars are over. Tax burdens which would not have been tolerated prewar are shouldered more or less willingly during wars, and this willingness carries

over into postwar periods. Along with this, there is a greater postwar demand for public spending. Part of this demand is already latently present in the sense that more government spending has been desired all along but could not take place because of resistance to higher taxes during peace. Partly, however, increased demand results from an "inspection process," a war-induced awareness of social needs and of membership in the broader public community.

Accompanying the displacement effect, or more accurately a part of it, is a "concentration process." This refers to the fact that an increasing share of public expenditures are accounted for by the central government following periods of war. This comes about partly due to the allegedly superior efficiency of centralized administration but partly because of a war-induced or heightened desire for uniform levels of public benefits and services.

The most convincing part of the argument is that which concerns the effect of war on the willingness of the community to support permanently higher levels of taxation. The importance attributed by the authors to the inspection effect as an explanation of increased spending seems exaggerated to the reviewer, though the argument for the existence of such an influence is quite convincing. Least satisfactory is the explanation of the concentration process, though the fact of increasing concentration is not itself disputed. The reviewer feels that concentration is much less the result of the existence of realizable technological efficiencies or of community-wide desire for equality than it is of the fact that the revenues of the central government increase more rapidly during the war than do those of local governments. In other words, the central government spends more because it has more to spend. But my objections are not serious ones. The authors make a convincing case for the existence and importance of their various "processes" and "effects" and are probably all too well aware of the difficulty of assigning weights to them.

A final, though again not serious, criticism of the conceptual framework is that more stress could have been put on the historically relative character of these concepts. The authors show quite clearly that the behavior of public expenditures was different in the period preceding the one they examine (1890-1955), and they should perhaps have more clearly taken into account the possibility that the displacement effect may run into diminishing returns in the future—assuming there are any taxpayers left after another war.

As for statistics, they are plentiful and impressive, though the amount of estimation involved in making data comparable over time is always somewhat appalling to those not overly statistically minded. No matter how sophisticated the supporting arguments, some (the reviewer among them) are left with a feeling of unease when statistical series are advanced as substantial evidence of the validity of various theses. In this connection, however, Peacock and Wiseman are commendably cautious. They claim only that the statistics they cite are compatible with, rather than conclusive support for, hypotheses which are convincing on other as well as on statistical grounds.

FRANK H. JACKSON

Alma College

The Role of Debt in the Economy. By HELEN J. COOKE. Washington: Public Affairs Press, 1961. Pp. ix, 115. \$3.25.

Economists who venture forth among laymen find that, sooner or later, they must face up to some questions about debt. More often than not, when this occurs, they must also endure the discomfort that arises from squirming through tangled notions of morality, monetary crankisms, and plain bad information. To all who have plumbed these depths, Dr. Cooke's study will come as a pleasant and useful tonic.

This little book examines succinctly the central points at which the institutions of our credit system touch the performance of our economy. It explores the rationale of our debt system by looking at the reasons why borrowers find debt convenient, expedient, or economical, and the reasons why lenders find debt profitable.

A chapter on "The Debt Structure" is focused on the relative share of debt owed by the major borrower sectors and an evaluation of "the burden" of debt for each sector. For most sectors the author records the major changes since 1929 in debt patterns: types of securities, purpose in borrowing, and financial position ratios. Discussions of the burden of debt, which focus primarily on the relationship between debt service requirements and income, support some conclusions that are reassuring:

Corporate debt: "This burden is still relatively low . . ." (p. 26)

Consumers debt: ". . . does not appear to be unduly burdensome." (p. 31)

Farmers debt: ". . . the current burden does not appear to be excessive. . . ." (p. 37)

Non-corporate business debt: ". . . the burden . . . and the danger of default is likely to be greater for small business as a whole than for large or corporate business." (p. 41)

Federal debt: "The interest payments seem to be well within the ability of 'the borrower' to carry." (p. 45)

State and local debt: "The current overall interest burden does not appear to be high." (p. 51)

The chapter "Debt and the Lenders" briefly covers the institutionalized portion of the supply side of the money and capital market. Its content is a capsule of what one can find in the descriptive sections of the traditional money and banking text. There is an elementary discussion of the Federal Reserve System with a focus on Federal Reserve history and law. Lending policies of commercial banks, insurance companies, savings and loan associations, and other financial institutions are examined with reference to liquidity and solvency needs and government regulation and support.

The book ends with two short sections on "debt and economic fluctuations" and "the outlook for debt" which convey sensibly what the author intends: that debts will continue to grow with the rest of the economy and, from time to time, will foster instability.

This book is, admittedly, an introduction to the subject. Its 98 pages of text are shorn of theoretical structure beyond the truism: for every borrower, there must be a lender. Yet, for the student who has not read a money and banking textbook, it will create an awareness of the omnipresence of debt

and the consequences of operating an economic system with debt as a part of its institutional structure.

In the introduction, which is written by W. H. Steiner, discussion of such topics as the Gurley-Shaw thesis are explicitly ruled out of the book as controversial. Why Gurley-Shaw was interdicted when other controversial issues, such as the federal debt ceiling (about which Professor Cooke has written elsewhere) and theories of treasury debt management policy, were included, is not clear. It is regrettable, because I suspect that if the author had taken into account the advances that Gurley and Shaw have made in monetary theory, the "role" of debt would have emerged much more clearly; more controversial perhaps, but also more systematic.

The only major defect in the book is its inadequate treatment of one of the potentially important problems confronting societies that rely on a private credit system: the problem of mass and cumulative liquidation. Those who have not otherwise been informed of the characteristics of financial panic or of the progressive liquidation of debt that can occur in a pyramided private credit structure will not have that lacuna filled here. For an introduction to the role of debt, this is an unfortunate oversight. We have invented a number of structural safeguards since the early 1930's; but, until they are tested, the spectre of financial crisis cannot be dismissed in a serious examination of our financial structure.

Nevertheless, Mrs. Cooke has done an able job for which we can be grateful. She has shown the reader that debt is an economic institution which can be examined in a systematic way without reference to moral or political issues. I hope many people will read it.

MARSHALL A. ROBINSON

University of Pittsburgh

United States Fiscal Policy 1945-1959: Its Contribution to Economic Stability. By A. E. HOLMANS. New York: Oxford University Press, 1961. Pp. xiv, 342. \$6.40.

Holmans presents a detailed narrative of fiscal policy-making in the post-war era, stressing the relation to economic stabilization. He opens with an excellent summary of the institutional setting of U.S. fiscal policy, with its fragmentation of tax and appropriations responsibility. Then follows a penetrating analysis of the ideological overtones prominent in fiscal debate. Countercyclical finance is attacked by conservatives in the United States, he notes, because of fear of irresponsible extension of government power, while by contrast, in Europe it has been recognized as a conservative alternative to more extreme government intervention.

The chronological narrative itself is uneven in quality. At times the amount of irrelevant detail seems excessive, and the reader loses his way. There are tangles of proposals and counterproposals, with the reasoning behind each. But on balance, the narrative of policy actions contains much of value. If read judiciously, it conveys well the great variety of factors which influence fiscal decisions—pressure-group concern with particular tax or expenditure programs, balanced-budget ideology, practical considerations of appropriate

government influence on the flow of expenditures, the inescapable problems of national security, and the infighting of partisan politics.

There are abundant and frequently colorful quotations from Congressional hearings and debates, from presidential messages, and from the press. We learn, for example, from one senator that deficit spending is bad because "it leaves out the human equation and the spiritual drives that are our greatest resource" (p. 239).

Holmans concludes that postwar fiscal policy was reasonably successful, and that while this was partly a matter of luck, "capable management of national economic policy was never a negligible factor" (p. xiii). He is impressed by the absence of destabilizing actions such as recession-inspired economy drives, and credits this in part to "a steady increase in familiarity of men in public life with the elements of counter-cyclical fiscal policy" (p. 298).

He is impressed by the restraint shown in adopting expansionary measures during recessions, contrasting it with the oft-expressed fears of fiscal irresponsibility. At the same time, he is confident that "more drastic measures would have been taken had the recessions proved more severe or prolonged" (p. 299). True, the balanced-budget doctrine has wide vocal support. But "when deflation is the pressing problem, the balanced budget has to yield to the more urgent goal of checking the decline and bringing about recovery, both out of common humanity . . . and to avoid the fate that the recent historical record suggests awaits parties that allow serious recessions to develop" (p. 302).

His optimistic views do not prevent Holmans from suggesting that improved flexibility may be needed. He expresses concern over the recent unwillingness to use tax-rate changes countercyclically, and over the tardiness with which both the Truman and Eisenhower administrations were willing to recognize the existence of recessions.

Although the conclusions are defensible, some readers will find the actual analysis of year-by-year consequences of fiscal policies superficial. The book can usefully be supplemented by the more incisive, though perhaps overly critical, Joint Economic Committee Staff Report on Employment, Growth, and Price Levels. Nevertheless, Holmans' book constitutes a valuable contribution to the literature of political economy.

PAUL B. TRESCOTT

Kenyon College

Finanza pubblica. Vol. I. By LELLO GANGEMI. Naples: Giannini, 1961. Pp. xii, 470. L. 6,000.

This book is the first of two volumes of Professor Gangemi's work designed as a university textbook in public finance. In fact, the two volumes represent the sixth edition of the author's *Elementi di Scienze delle Finanze* with the basic difference that the latest edition aims at presenting a "system."

The reader soon discovers that one of the most noteworthy features of the volume under review is its cosmopolitan character, which finds expression in both the presentation of public finance theory (without institutional links)

and the extensive international bibliography. While it is difficult to estimate the benefit reaped by Italian students from Gangemi's international scholarship, it seems that the author has struck a compromise at the expense of his country's fiscal policies and problems. Due to the very limited attention given to them, the book will be found much more normative than positive. This plus the fact that statistical data or illustrations are largely absent may be considered the book's serious deficiency. How is the student to acquire some sense of proportion among the monetary and other quantitative magnitudes which are inseparable from the collection and disbursement of the taxpayer's money by his government?

The book concentrates on the general aspects of a public economy (devoting as many as 50 pages to the "sociological" ones), and on public expenditures and public revenues obtained through taxation. In all these respects, it is highly didactic, very comprehensive and carefully organized. Should the second volume maintain the level of the present book, it will be a valuable contribution to the literature on the distributive effects of taxation, public debt and fiscal inflation, functional finance in both developed and underdeveloped countries, social security, and the finance of the European Common Market.

From Gangemi's point of view, public finance is a very complex science as his own definition suggests. In terms of the latter, public finance is a discipline which studies all: the causes; the economic, technical and juridical methods; and the economic and social effects of the compulsory action inherent in collecting government revenue. It also studies the use of the means that enable public bodies to perform their functions which are qualitatively and quantitatively determined by the holders of governmental power operating in different countries within the framework of different political and social structures (p. 15). But the basic difficulty in arriving at a financial organization capable of realizing the principles of financial rationality and justice is, in Gangemi's conception, explained by the close relationship between public finance on the one hand and sociology, social psychology and law on the other hand. Unavoidably, having looked for complicated relationships, the author finds a complicated reality—and justly so. As may be expected of Continental economists trained in law schools, Gangemi contends that what determines the scope of governmental "financial sovereignty" is the existing law.

Also in line with European tradition is the view, adhered to throughout the book, that the State is a factor of production, an agent of social cohesion, with definite objectives to fulfill, which need not be in harmony with the aims of the economy. In the free economies this rather common fact can hardly have a disturbing influence if one postulates or takes for granted, as one does on the Continent, that present-day national governments implement welfare states. Gangemi leaves no doubt about his belief in the *stato sociale moderno*.

Despite the fact that by far the largest portion of the author's fiscal theory applies to Western democracies (*area euroamericana*), he gives some abstract attention to totalitarian financial systems, but fails to produce any analysis

worthy of special note. Neither are nationalization and problems connected with it accorded the desirable analytical interpretation.

It is quite natural for Gangemi to incorporate in his system many ideas of other, in most instances Italian, public finance experts. From among these, DeViti's theory of transportation rates may be briefly referred to (pp. 307-8). These rates have two developmental stages: in the first, they diversify and multiply, and in the second, they show a tendency toward simplification and unification. The more people use a particular transportation facility, the greater the tendency toward a general, average, but gradually proportional rate which does not directly differentiate between travelers for short or longer distances. The transportation company need not set its rates; it merely accepts those rates which arise from the above process. The latter is, moreover, supplemented by the tendency of rates to become lower in response to increased consumption, i.e., due to the economies of large-scale production. Through such a process of rate unification one arrives at a subscription price (e.g. a weekly railroad ticket) which, in DeViti's view, becomes the incidence of income taxes imposed on the seller (public utility company). Gangemi accepts the theory, but without examples.

It appears that practically all Italian writers in the field of public finance have been critical of progressive tax rates. This author, too, is conscious of the fact that progression is unsuitable for countries with relatively low per capita incomes and the income distribution peculiar to them (pp. 386-96). (Nevertheless, there are progressive tax rates in the Italian tax system.) His analysis of the six types of progression detectable through international comparisons, with accompanying graphs, is useful. Gangemi lists altogether ten arguments against progression and asserts that these tax rates are in conflict with decreasing marginal utility of higher incomes and, particularly, the steadily rising cost at which they are acquired. Once more he agrees with DeViti that progression is best adaptable to the taxation of inherited wealth.

In this first volume of his system, Gangemi has in many respects accomplished what he set out to do. Because of its exhaustive coverage of theoretical principles, the book deserves international attention.

KAREL HOLBIK

Boston University

International Economics

Foreign Trade Credits and Exchange Reserves—A Contribution to the Theory of International Capital Movements. By BENT HANSEN. Amsterdam: North-Holland Publishing Co., 1961. Pp. x, 144. \$3.80.

This is a pioneering effort to explore theoretically, and to a limited degree empirically, the recondite subject of the financing of foreign trade, and to relate changes in trade credits to changes in the balance of payments on the one hand and foreign exchange reserves on the other. It appears at an opportune time since interest in short-term capital movements has revived; and it was in fact inspired by substantial changes in the Swedish balance of

payments on current account in 1955 to 1958 which, in the absence of visible capital movements, were thought to reflect changes in trade credits, or what are called in Britain and the United States, the "leads and lags."

The analysis, as one expects from Hansen, is rigorous and acute. Starting off with definitions and a discussion of the difficulties of measuring trade capital from the residual in the balance of payments, he proceeds to demonstrate through algebra how trade credits—representing the difference between deliveries of goods and payments for them (positive or negative) are affected by changes in a wide number of variables—the price and quantity of goods traded, the credit period, interest rates at home and abroad, and the spot and forward rates of exchange. The major finding throws some doubt on the accepted view that a rise in the domestic interest rate will increase the import (or reduce the export) of trade capital. This is true of deferred payments (when delivery precedes payment). With higher interest rates at home, foreign bills will be discounted more quickly; and the effect of rising interest charges in reducing the volume of exports will work in the same direction. But on prepayments, the effects operate in different directions: higher interest rates at home lead to a demand for more prepayments and longer credit periods, but higher costs reduce exports and tend to reduce the import of trade capital. One surprising empirical finding, which increases the significance of this theoretical result, is the large size of advance payments to Swedish exporters. At the end of 1957, advance payments on exports amounted to almost 1 billion Sw.kr. compared with annual Swedish exports of 11 billion in 1957 (p. 120).

The analytical subtlety which Hansen brings to bear on the problem is put into some question when he describes how Swedish traders and commercial banks actually operate. For example, he states (p. 73) that Swedish banks discount foreign bills at their domestic discount rate even when the foreign discount rate is lower, which suggests irrationality or barriers to competition on the part of the exporters who could get a higher return by developing banking connections in London; and again (pp. 73, 74) Stockholm banks discount foreign (sterling) bills at the spot rate of exchange and almost always hold them to maturity, thus embracing the exchange risk, whereas in his analysis banks and traders speculate only when they expect the future spot rate to depart from today's forward rate, and for the most part remained hedged. The finding that Sweden finances its exports and lets foreigners finance Swedish imports, on balance (p. 121), also and admittedly raises doubt as to the value of pursuing to the last subtlety analysis which supposes that interest-rate differences are dominant.

Finally, one may question whether Hansen divides his time properly between the problems arising from changes in exports, imports, credit periods, interest rates, and expectations with traders avoiding exchange risks, and the interesting and trying case where traders speculate. The latter is dealt with neatly and correctly but in only two pages (pp. 105, 106). It would have been useful to have Hansen's views on the relative importance of swings in trade credits based on trader speculation, and those arising from the other

monetary and commercial considerations with which he deals, especially in the light of the wide swings in "leads and lags" in the British balance of payments, and perhaps recently in the United States.

Despite these qualifications, the monograph is an interesting and important contribution on a relatively unexplored subject in which analytical elegance is on the whole combined with, rather than substituted for, relevance.

C. P. KINDLEBERGER

Massachusetts Institute of Technology

Economic Integration: Aspects and Problems. By PAUL STREETEN. Leyden: A. W. Sythoff, 1961. Pp. 150. f 12.

Streeten has written a collection of essays which deals with some of the most important aspects of the rather broad subject of economic integration. The first three chapters deal rather closely with the subject of European integration. Chapter 4 is an essay on the pros and cons of domestic vs. foreign investment, while Chapter 5 contains a most interesting essay on the subject of unbalanced growth. In the first three chapters, economic integration is used in the sense of bringing together a number of countries in a community of nations in which, from the economic viewpoint, the significance of national boundaries has been reduced to a minimum. In Chapter 5 economic integration is used to express the degree to which economic progress on different fronts and at different times should be coordinated or "balanced."

Chapter 1 briefly surveys postwar attempts at European integration, including proposals for a regional customs union, EPU, Schumann Plan, etc., and contains a comparison of the Common Market and the European Free Trade Area. In discussing the Common Market, the point is made that the European Economic Community (EEC) has so far acted liberally and that there were forces present which might well push both the EEC and EFTA in the direction of an Atlantic Economic Community, including the United States and Canada, which would move toward non-Soviet world free trade. Streeten's observations are particularly interesting in the light of the subsequent foreign trade proposals by the U.S. Administration.

The case for European free trade and free factor movements is considered in Chapter 2. On balance European integration is seen as having net foreign trade advantages, although disadvantages are also indicated by the author, such as the disrupting of trade relations with non-European countries, like the British Commonwealth. Streeten expresses doubts with regard to the classical arguments for free trade, finding it questionable whether free trade is a sufficient condition for bringing about the desirable reallocation of resources and then noting that, even if it did, European free trade is only a regional and partial scheme; which necessarily implies that it would lead to some misallocations which have to be set against the improvement. As for free factor movement, the point is well made that the gains are likely to be greater and more certain if they are accompanied by common European policies relating to investments, the balance of payments, and employment. In the absence of such policies Streeten believes that restrictions on factor movements may give better results. The reviewer would hope that this is not

taken to mean that the actual freeing of factor movements should await the adoption and implementation of such European policies. For reasons very similar to those argued by the author with respect to unbalanced growth, the freeing of factor movements in advance of agreement on common policies may lead to common policies, whereas insistence on a simultaneous approach may lead to neither.

Streeten devotes his third chapter to the objections which have been made to European free trade. He sees the inevitable dislocation as a necessary condition of improved allocation, although it must be counted as a cost of the desired benefits. He recognizes that free trade makes less rapidly innovating countries vulnerable, but feels that this can be offset by the spreading of innovation. He is concerned with what would happen to the British Commonwealth, but seems to feel that this could be handled by allowing the underdeveloped Commonwealth countries to join on the same terms as the associated overseas countries, namely, permitting them to protect their infant industries with a preferential tariff on European goods, while their products are granted free access to the whole European market.

Streeten is also concerned with the balance-of-payments implications of European integration. He takes for granted the need for realignment of exchange rates if European integration takes place (a proposition with which the reviewer does not agree) but after integration regards devaluations or floating exchange rates as frustrating the very purposes of integration. Nevertheless, he sees the persistence of balance-of-payments problems. As with others, his remedies lie in the direction of advocating more liquid reserves or credits. He seems to see in import restrictions one technique for coping with balance-of-payments difficulties, and in general reflects a greater willingness to use this device than the reviewer would think warranted. On the other hand he recognizes that import restrictions by themselves do not contribute very much to the solution of dynamic disequilibria and indeed might aggravate them. He points to the possibility of a common currency and full monetary integration. He suggests some sort of use of a European central bank which would grant credits linked with a scheme to make loans to underdeveloped regions. His discussion of regional balance-of-payments problems is stimulating but leaves one unsatisfied because he does not put the European currency problem in the context of worldwide convertibility and existing international institutions.

Chapters 4 and 5 are separate essays although they have implications for European integration. Chapter 4 deals with the cost and benefits of domestic as against foreign investments. Streeten focuses on whether private decisions guided by profit considerations coincide in this field with the national economic interest. He feels that whether countries should, from a national viewpoint, discourage capital exports and encourage imports of capital, would depend on the relation between the divergence of private profits and national gains at home and abroad. Streeten makes the very useful point that capital-output ratios are not constant for increments in investment and that it is impossible to derive the capital-output ratio for a specific foreign project from prevailing capital-output ratios in a foreign country. Unfortunately, in some

countries planning (incidentally, on the advice of foreign expert economists) is based on the erroneous assumption of a constant capital-output ratio.

He seems to be convinced that foreign private investment is unstable and requires frequent adjustments in the balance of payments of the receiving countries. From experience, it is the reviewer's opinion that changes in foreign private investment do not seem to have been a major cause of the repeated balance-of-payments crises which many of the underdeveloped countries have experienced in the postwar period. Streeten, of course, recognizes the constructive use that can be made from inflows of private capital.

The final essay gives Streeten's views on balanced versus unbalanced growth. Streeten joins the other more realistic economists who recognize that growth is inherently unbalanced. The burden of Streeten's theme is "that in certain conditions unbalance may stimulate rather than impair progress, that it may be a condition of, rather than an obstacle to, rapid growth, and that too great an emphasis on balance may cause, rather than prevent stagnation. Bottlenecks may not only, in some conditions, hold back production, but they may also, in other conditions, powerfully stimulate the growth of the complementary activity that has lagged behind" (p. 102). Among his principal arguments are: that complementarity can support the argument for unbalance as well as balance; that in dynamic society new wants are created in the process of satisfying existing ones and complex consumption patterns spring from simple innovations; and that unbalance leads to new consumption opportunities which in turn lead to new investment opportunities. In this essay on growth there is virtually no discussion of economic integration as such but there is the point that in a large economy the benefits of unbalanced growth can be more easily combined with those of balanced growth. This is one of the key advantages offered by the Common Market.

In this volume Streeten has served an appetizing hors d'oeuvre, but the main courses are still to come. In a larger volume he might explain more about what government policies he would advocate to deal with the various problems set forth, give more attention to problems of monetary policy including balance-of-payments and exchange-rate policies, expound more on the differences in conditions found in various countries, and, generally speaking, give more evidence for the validity of his point of view. However, even in these brief essays, Streeten has provided much food for thought and alerted his reader to possibilities that might otherwise be neglected.

IRVING S. FRIEDMAN

International Monetary Fund

The Theory of Economic Integration. By BELA BALASSA. Homewood, Ill.: Richard D. Irwin, 1961. Pp. xiii, 304. \$5.50.

During the years of negotiation and compromise which led to creation of the European Common Market, a large body of theoretical and empirical literature accumulated on the economic effects of regional integration. The apparent success of European measures of integration, and the appearance of several other schemes for regional integration, have stimulated even more studies in recent years. Balassa surveys this large and growing body of litera-

ture in the present volume. He regards the theory of economic integration as a part of international economics, but in his survey he finds it necessary to deal with a wide variety of material. As with international economics, it is necessary in discussing economic integration to make use of analytical methods and data developed in nearly all branches of economics. Thus, in less than 300 pages of text Balassa discusses an enormous literature, touching on welfare economics, growth theory, monetary and fiscal policies, economies of scale, several topics in international economics, and also examining the growing literature on regional economics. He covers not only theory and related empirical results, but also includes brief accounts of institutional and descriptive aspects of the EEC, EFTA, and Latin American common markets. Of these, the EEC is by far the most thoroughly covered.

On the whole, Balassa has succeeded extremely well. His discussions are balanced, clear, and well-organized. However, space limitations sometimes require him to be almost painfully concise, as when he summarizes the factor-price equalization discussion in just three pages. In many places his discussion consists of a succession of one-sentence summaries of pertinent articles and monographs. It is significant that the book does not contain a single diagram or equation—this in a field in which both devices flourish. As a result, although this book provides a useful over-all view of the subject and an excellent guide to the literature, for anything like a full understanding one must go to the literature that has been summarized. One particular virtue of this book is that much European literature, relatively unfamiliar to U.S. readers, is included in its purview.

The book is divided into three parts: statics, dynamics, and policy. In Part I, Balassa deftly summarizes the now familiar analysis of a customs union under static assumptions. He believes that reallocation of production in Europe will result in more gains than most writers have thought, but he is cautious about the welfare effects of the EEC. He concludes with a "guess" that under static assumptions *world* welfare will decline, largely because the marginal utility of income is higher in underdeveloped than in advanced countries. This part of the book also contains a chapter in which factor movements receive more attention than in most discussions of customs unions.

Part II, dynamics, is largely concerned with the influence of market size on growth and productivity, and with internal and external economies. Here the limitations of space do not press so heavily, and the exposition is richer and more complete. Balassa examines a variety of empirical studies bearing on the theories presented, and even undertakes to test hypotheses. The tests are a bit forced, but in this part of the book Balassa makes a real contribution. He is considerably more optimistic about the potential economic gains to be achieved through integration than most other writers have been. He concludes that expansion of the market through integration will make possible significant improvements in productivity, mainly because of the beneficent influence of internal and external economies. He thinks such economies will be important in both European and Latin American integration, but in several places he argues that potential gains are especially important in unions of underdeveloped countries. Empirical studies are assembled, analyzed, and

found to support these conclusions. (Here, as elsewhere, Balassa relies on existing empirical studies. He has made none himself, although his analysis of existing studies is valuable in itself.) Other dynamic factors, such as the effect of integration on market structure, degree of competition, rate of technological change, and rate of investment, are more briefly treated.

Balassa clearly regards the dynamic aspects of integration as more important than the static, although he tries to marry the two in his chief criterion for success of an economic union, namely, its ability to achieve "dynamic efficiency." This term is defined as "the hypothetical growth rate of national income achievable with given resource use and saving ratio" (p. 13). Although he is optimistic about the dynamic gains that may accrue to the members of an economic union, he is less certain about the effect on third countries. In the EEC, growth effects may outweigh harmful trade-diversion and terms-of-trade effects in a twenty-year period, but in Latin America the outcome is uncertain because prospective structural changes make it difficult to know with what alternative situation one should compare economic integration.

Part III, policy, deals with the problems of coordinating or harmonizing social legislation and monetary-fiscal policies in a customs union. It also contains interesting sections on balance-of-payments and intraregional growth problems of a union. Balassa analyzes each of several different policies in order to determine whether or not harmonization is desirable from the standpoint of economic efficiency. This is a valuable and often ingenious discussion of problems that have not figured prominently in economic writings on regional integration. However, the results cannot easily be summarized. In general, Balassa opposes harmonization where national differences reflect basic differences in competitive costs. Such differences should be removed by competition in product and factor markets. But where differences in social policies mask or even distort competitive cost structures, Balassa favors harmonization.

Considering the limitations of space, Balassa has packed a remarkable amount of theoretical and empirical analysis into this book. It is the best all-around survey of the subject I have seen.

JAMES C. INGRAM

University of North Carolina

The European Common Market—An Analysis of Commercial Policy. By ISAAH FRANK. New York: Frederick A. Praeger, 1961. Pp. 301. \$8.50.

Books on European economic union are coming at flood rate. This is a good one, limited in scope, carefully documented, sprinkled with good judgments. The author, in charge of the Office of International Financial and Development Affairs in the Department of State, writes from a background of solid experience and close attachment to the issues involved; yet he treats his problem with a sufficiently broad perspective so that the average reader will not get lost in the trees.

The work is sensibly organized. The first chapter provides a brief survey of the problem of European economic union in the early 1950's, in the in-

stitutional context of the existence of the OEEC and GATT. Chapters 2 and 3 deal with the Rome Treaty's handling of tariffs, quotas, and discrimination among the Inner Six. For the most part these chapters deal with technical problems, but Frank emphasizes the issues involved, not the details. Toward the end of Chapter 3 an attempt is made to assess the economic effects of the union, but this is not very satisfactory, going little further than discussion of Viner, and Meade's extensions of Viner's analysis.

Relations of the Common Market countries to the outside world in general are treated in Chapter 4, with emphasis on the basic issue of the height of the common external tariff. While in this discussion and elsewhere Frank recognizes some of the limitations of the usual measures, drawing extensively on Viner's well-known cautions developed in 1936, nowhere does he deal directly with the importance of an *ad valorem* rate on value added, as contrasted to total value, in measuring the degree of protection afforded by tariffs. This is a shame, because at least in this reviewer's opinion it is a relevant and indeed probably essential element of the problem.

An interesting summary of most of the basic commercial policy issues involved in obtaining agreement between the Inner Six and the Outer Seven is provided in Chapter 5, followed by a long chapter on quota problems of the Community. This last chapter is the only attempt Frank makes to go deeply into an issue, and presumably is in the nature of an appendix. In it he makes a persuasive case that quotas cannot be applied effectively against the outside world by Common Market countries to correct balance-of-payments difficulties without disrupting free trade within the Community, and that therefore more intensive efforts must be made to strengthen Community influence over national monetary-fiscal policies of individual members.

This reviewer is glad that a man of Frank's ability and judgment, as shown by this unfortunately grossly overpriced book, is representing this country in commercial policy negotiations with Europe. We are in good hands.

PHILIP W. BELL

Haverford College

The Dollar in Crisis. Edited by SEYMOUR E. HARRIS. New York and Burlingame: Harcourt, Brace and World, Inc., 1961. Pp. x, 309. \$3.45.

Despite the use of the singular case in its title, this book is about two "crises," the dollar glut and the alleged shortage of international liquidity, even though most of the fourteen pieces—prefaced by an introductory essay longer than any of the contributions, from S. E. Harris' experienced editorial hand—concern themselves with causes and cures of the recent U.S. balance-of-payments deficits. The two problems are distinct, the cure of either one does not mitigate the other. Even though they are of course interconnected by the fact that the U.S. dollar is the chief reserve currency, they require separate diagnostic and remedial treatment, and the book does not gain from putting two severely debated but separate issues between the same covers.

There is little disagreement among the contributors about the basic diagnosis of the U.S. balance of payments. (1) It has recently shown an abnormally large deficit, caused in the end largely by short-term capital move-

ments, though generally the current account surplus has been insufficient to cover net expenditures on capital and official donation accounts. (2) U.S. products have become less competitive in world (including U.S.) markets, largely because increases in labor productivity have failed to offset money-wage increases. These two points are set out by the contributions from Walther Lederer and R. N. Cooper, Jaroslav Vanek and Egon Sohmen. While the possible contribution to the foreign deficit by U.S. monetary and fiscal policies is dealt with less than it would deserve, Vanek attempts, plausibly but in the nature of the case hypothetically, to trace parts of the deficit to some longer-run developments. The case for the need to increase international liquidity—argued in any case only by two contributors, Roy Harrod and Robert Triffin—is based on qualitative considerations: lack of liquidity prevented a sufficiently strong domestic expansion (Harrod) and led to a dangerous extension of the U.S. role as reserve-currency country (Triffin).

As to policy aims, it is generally agreed that (1) the U.S. balance-of-payments deficit should be reduced, and (2) that the U.S. economy should expand more rapidly and provide more employment than it has recently done, but that domestic credit restraint (not always very precisely specified) is likely to interfere with the achievement of these objectives (only Gottfried Haberler clearly dissenting). It is also fairly generally agreed (3) that there should be no less, and probably more, aid to underdeveloped countries and to countries needing military assistance, though it should not necessarily be provided by the United States.

The policy prescriptions, rather severely limited by the facts and the objectives of the case, are mainly three for the U.S. balance of payments: prevent an increase in money labor cost per unit of output in the United States compared with its competitors (Haberler), devaluation of the dollar (Harrod and Vanek), and transfer of the burden of aid financing from the U.S. to surplus countries in Europe (E. M. Bernstein); and two for the alleged lack of liquidity: raise the price of gold (Harrod) and reorganize the International Monetary Fund so as to abolish reserve currencies and provide more foreign aid (Triffin).

There can be little quarrel about the basic facts. The evidence on decreasing U.S. competitiveness, qualified as it must be by the nature of the relevant statistics, is acceptable enough. However, the presentation of the U.S. balance of payments, made by Lederer on the pattern of the U.S. Department of Commerce and unfortunately not discussed by any of the other contributors, tends to exaggerate the magnitude of the problem.¹ This presentation includes in the balancing item—i.e., in effect in the measure of the U.S. deficit (though not of the surplus), the increase of gross U.S. liquid liabilities not only to official but also to private holders. This has two inconvenient consequences. The U.S. deficit, the diminution of which is the object of policy, includes those increases in liquid foreign dollar claims which are a natural growth of

¹ See on this issue the telling critique of the official U.S. statistics by Walter Gardner ("An Exchange Market Analysis of the U.S. Balance of Payments," International Monetary Fund, *Staff Papers*, May 1961.) This article also gives some calmly reasoned discussion of size and remedies of the deficit problem.

international reserves, considering the annual rate of growth of international transactions (world trade is estimated to have grown by 12 per cent in 1960). So long as the U.S. dollar continues as a reserve currency, this is inevitable. Nor does it threaten international, or U.S., liquidity provided there are no other factors that diminish confidence in the dollar. Secondly, this presentation of the facts does not allow for the fact that, with free convertibility, the threat to the proper functioning of the present international monetary system from foreign holdings of short-term claims on the United States cannot be distinguished from that from domestic holdings of such claims. Why then worry about the one and not about the other?

Thus, either one would have to say that a large part of what is now defined as the U.S. balance-of-payments deficit is not only no cause for worry, but desirable,² or the definition would have to be revised. The difficulty is not purely linguistic, as witness the "crisis" title of the book and the undertone of emergency in many of its passages.³ It could be removed, if one were to distinguish between the balance-of-payments deficit and balance-of-payments weakness, especially in the case of a reserve currency country such as the United States: a deficit to consist of a decline in *gross official* holdings of liquid foreign assets, and a balance of payments said to be the weaker, the larger are *gross* liquid foreign liabilities, but taking into consideration also the role of the country as a reserve currency country, and its rate of domestic monetary expansion. This would put the emphasis where it belongs, i.e., on the balance of payments on current and long-term capital account, on the performance of the United States as a reserve currency country and on its internal monetary (and fiscal) policies. The question of how large the annual growth of liquid U.S. liabilities to official holders should be, is touched upon, interestingly but briefly, only in Vanek's paper (pp. 173-75). The apparent dilemma between reducing the U.S. deficit, presumably desirable, and the reduction of international liquidity with the mopping up of liquid claims on the United States, presumably undesirable, remains unresolved.

There cannot be any quarrel with the proposition that the U.S. economy should grow faster, at lower levels of unemployment. It is not altogether clear, however, what is meant by the point, recurring in many places in the book, that the recent balance-of-payments deficit hamstrings the freedom of policy action designed to reach these objectives. More, it is argued with some force by Harrod that the shackles put on such action by the failure to raise the dollar price of gold are even more noxious. Surely the case for more monetary expansion in a deficit country is no stronger for the United States than for any other deficit country. More precisely, it is strong only where it could be shown that monetary expansion would produce an expansion of output such

² The comparison of the total of all U.S. foreign liquid liabilities with the U.S. gold stock (or even "free" gold) should really not be dignified by as much attention as it gets, even from a very narrow banker's point of view.

³ For instance there is no need to provide gratuitously glaring stage lighting for Triffin's apocalyptic three indictments of the present system—i.e., that its functioning depends on "the hazards of gold digging . . . ; Khrushchev's policies about U.S.S.R. gold sales . . ." and "the perpetuation of our balance of payments deficits . . ." (p. 284).

that exports would rise more than imports. That such cases are possible has been shown by recent experience in several European countries and in Japan; and no matter how one would arrange the details of the analytical treatment of these cases, it would seem clear enough that domestic expansion—or, if you prefer, development—need not endemically produce balance-of-payments deficits. In these cases, initial foreign deficits were no lasting straight jackets; they were financed and disappeared. The problem how to combine expansion of output with growing competitiveness is more than a matter of monetary expansion on the basis of larger international liquidity. The absence in the book of any attempt to exploit this experience (even in Sohmen's contribution on "The Dollar and the Mark") leaves a disturbing undertone of despair leading to the recommendation to devalue the chief "key currency," and a proclivity to gadgets (see Harris' list of 28 remedies, pp. 2-3). It is not fully offset even by Haberler's excellent advice to hold wage advances a little below productivity increases in deficit countries and to push them a little beyond that in surplus countries, because the implementation of such a policy is not fully specified. Neither increasing international liquidity nor devaluation would be sufficient to produce more than temporary relief unless expansion could be assured to be accompanied by increased competitiveness. They are unlikely even to be necessary. The probability is that existing institutional arrangements, especially those centered on the International Monetary Fund, are sufficient to finance the temporary deficits. The remainder of the problem is a matter of domestic flexibility within an over-all disinflationary fiscal and monetary policy.

There is another aspect of the complaint about insufficient international liquidity. It is argued—explicitly by Harrod and implicitly by Triffin—that the lack of international liquidity "has prevented one free country after another from adopting a policy of economic expansion" (p. 46). If this means that these countries have been prevented from expanding beyond the means available to them short of the desired increase in foreign assets, then increasing international liquidity is in effect here recommended as a means of international redistribution of resources (e.g., à la Triffin through replacing key-currency and gross Fund assets by obligations of underdeveloped countries).⁴ Such a redistribution may or may not be thoroughly desirable; in any event it would better allocate responsibility and accountability where they belong, if it were engineered through institutions already existing for the purpose.

The shift of part of the burden of foreign aid from a United States in deficit to European countries in surplus, such as Western Germany, that represents the core of Bernstein's contribution to this book, is debated on two grounds. On one side it is argued that aid is largely tied—in effect or ex-

⁴Triffin makes great play with the odiousness of carrying coal to Newcastle. But a reserve currency country must borrow short and under present international practices, will probably lend long (or donate): the coal is re-exported to where warmth is presumed to be needed. Moreover, as becomes clear from O. L. Altman's Triffin critique, the re-export of the coal through a remodeled Fund carries no guarantee of combining the creation of resources for underdeveloped countries from nowhere with that of a new form of international liquidity that would cost lower risks than the present system.

plicity—to U.S. exports (see e.g., Vanek's paper), and no large balance-of-payments benefit would be produced for the United States by the proposed shift. On the other, it is argued that, if anything, Germany is overexporting, and the United States underexporting, and there is thus no justification for the shift (see Sohmen's paper). But the benefits Bernstein hopes for would occur only if aid financing could be untied from exports and shifted from the United States to say, Germany without changing export origins. In fact, tying aid finance to exports can be justified only if it induces the tying of European exports to European aid financing, thus eliminating untied U.S. financing of European exports to aid destinations (but, it is to be hoped, more than this, i.e., European finance of U.S. aid exports).

Little more needs to be said at this late date about Triffin's proposals. The case for an increase in international liquidity beyond what present institutional arrangements can provide is not established. It is true that the case for substituting a form of international liquidity that does not consist of liquid liabilities of any group of individual countries, and the eventual establishment of a central bank of central banks, is perfectly arguable. However, as Altman has shown, the particular Triffin scheme presented in this book does not free the growth of international liquidity from the risk now involved for the present reserve currency countries; the scheme does nothing in effect to reduce the preoccupation with guaranteeing convertibility of international reserves into gold. The substitution of unconditionally available international liquidity for liquidity conditionally provided, as in the present policy practice of the Fund, would remove the combination of flexibility with discipline that is one of the major advantages of Fund operations. The combination of the scheme with increased development aid is deceptive or unnecessary.

HERBERT K. ZASSENHAUS*

Washington, D.C.

*The author is a member of the staff of the International Monetary Fund. The views expressed here are his own and do not necessarily reflect those of the organization with which he is connected.

Economia internazionale. By GIUSEPPE UGO PAPI. Turin: Unione Tipografico-Editrice Torinese, 1959. Pp. xix, 539. L. 4500.

This very impressive volume on international economics by a distinguished Italian economist is the eighteenth of twenty authoritative books in a cohesive series edited by G. Del Vecchio and C. Arena, of the University of Rome, under the title of "Italian Treatise on Political Economy." (Each of the other nineteen works, written by an outstanding Italian scholar, or scholars, deals with a major field of economics ranging, for example, from principles of economics to economic forecasting.)

At the outset, the author outlines what, in the most widely accepted sense, he considers to be the scope of international economics, namely, an inquiry into: (a) causes of economic development of a country; (b) causes of economic fluctuations (i.e., cycles) within which development takes place; (c) causes of the spread to other countries—through international trade—of the manifestations of development and fluctuations occurring in one country or

group of countries; (d) policies designed to attenuate the size and duration of fluctuations; and (e) policies to promote economic development of a country or region, including present-day processes of regional economic integration.

Topically, the subject matter of the book may be divided into eight parts: (1) a survey of concepts of development in the history of economic doctrine; (2) elements which favor and those which obstruct economic development of a country or region; (3) economic fluctuations and development; (4) influence of employment theories of Keynes and Pigou on business cycle theories; (5) stabilization and anticyclic policies and measures evaluated as to the effectiveness of each; (6) integration of economies as a typical development policy: the European Economic Community as an example; (7) proposal for the establishment of a Free Trade Area; and (8) concerted measures by governments of integrated countries essential for economic progress.

Papi re-examines the classical theory of international trade, or the Ricardian doctrine of comparative costs, and summarizes the main bases on which it has been criticized; namely, (1) that the hypothesis of international immobility of productive factors is invalid; (2) absolute differences in costs as well as comparative differences in costs furnish the basis for international trade; (3) Mill's contribution of the concept of reciprocal demand is inconclusive because the price of a good cannot be stated definitely in terms of another due to the difficulty of determining elasticity of demand for each good a priori; (4) the assumption of bilateral barter underlying classical theory is unrealistic because international trade is in fact multilateral; and (5) Ricardian conclusions are complicated a great deal when comparisons must be made between more than two countries and more than two goods. However, even leaving aside these criticisms, the Ricardian theory remains valid only when there exists a possibility of choice of goods to be produced as a result of a comparison beforehand between the goods that a country can produce or export in payment for goods that it wants to import.

The author then requalifies Ricardo's theory by offering a more general formulation of his own. This consists in the establishment of a ratio not between costs expressed in terms of labor-time, but between supply prices expressed in money terms, which, in each case, simultaneously will enable entrepreneurs to produce a good, and, at the same time, assure its sale in a market or markets. An actual example may be seen in trade between economically integrated countries (The European Economic Community). Here, trade is stimulated by a favorable relationship between supply and market prices that are reduced as a result of internal and external economies arising from integration itself.

Papi has produced a stimulating study in which theory and reality are woven together skillfully and presented in a scholarly style. Because of the lengthy discussion of the European Economic Community and the absence of any extended consideration of backward or underdeveloped countries, the book might be considered to lack balance. This, however, is more than offset by the plethora of original ideas which it contains.

NICHOLAS M. PETRUZZELLI

Silver Spring, Maryland

Free Trade, Protection and Customs Union. By L. H. JANSSEN. Leiden: H. E. Stenfert Kroese, N.V., 1961. Pp. viii, 157. f 20.

This work is an admirable attempt to extend our theoretical and empirical knowledge of international trade with special reference to customs unions. With considerable skill in manipulating algebraic, geometric and numerical techniques the author traces, in respective chapters, trade equilibrium with one scarce factor, two scarce factors, import duties with specialization, and import duties with incomplete specialization, under classical assumptions. The succeeding chapters critically examine Verdoorn's model for customs union analysis, and introduce Janssen's own approach to the subject under conditions of complete and incomplete specialization. The penultimate chapter presents some empirical results for the European Economic Community and the book concludes with a summary and four mathematical appendixes, the first three of which are on elasticity relationships.

Although the technical mathematical knowledge required of the reader is not high the book is not easy reading. To a certain extent this is due to the nature of the subject and the necessity of becoming acquainted with complicated notations, but it is also a matter of the exposition. Instead of listing up to 20 equations and then describing them, for example, the author might preferably, in view of the large number of different models, have followed each equation by its explanation. Also, there is nowhere given a single general system of equations from which the reader can spot particular models as special cases, with the consequence that the reader must work to discover the basic model from which the results are given in those cases where the system is provided only in differential form.

These remarks would bear less force if one could be confident that the results are free of significant error; there are, however, mistakes in logic and interpretation. For example, when Janssen calculates the effect of a tariff on the terms of trade he appropriately divides his model, for expositional purposes, into two phases: the first phase is the excess demand for one of the goods caused by the tariff at constant terms of trade and the second phase is the excess supply of that good due to changes in the terms of trade. This is traditional theory except that the coefficient of the change in the terms of trade, which is usually taken as the sum of the elasticities less unity, contains, in Janssen's result, an income effect arising—even in the complete specialization model—from the "increased value of production" (e.g., p. 36), whereas the income effect is already incorporated into his price elasticity (as Janssen himself points out in Appendix I). The simplest way to prove the error is to see that Janssen would get different results if the terms of trade were allowed to adjust through changes in foreign export prices, an invalid result in a non-monetary model.

A further error arises from the author's attempted proof that the elasticity of demand for imports must be unity or greater, a mistake based on incorrect reasoning about the relation between average and particular income elasticities of demand. Since it cannot be proved that the income elasticity of demand for imports is unity, it cannot, as a consequence, be demonstrated that the price elasticity is unity or greater.

The empirical results from a study of E.E.C. are interesting. The gains from increased specialization are largest for Italy, but only amount to .1 per cent of total production. The specialization effect is indeed swamped in most cases by the welfare effect of changes in the terms of trade which, under one set of assumptions, will raise income in the Netherlands, B.L.E.U., West Germany, France and Italy, respectively, by percentages of 3.00, 3.22, .33, -.28 and -.12. In other words France and Italy (largely because they had high initial tariffs) will lose on balance from the customs union while the other three countries gain slightly. These results are all the more surprising in view of Janssen's calculated increases in exports of West Germany, France and Italy due to the customs union of over \$2 billion each.

The results lead the author to conclude "... the advantage of the customs union *in itself* can scarcely justify, if at all, the painful and by no means easy process of adjustment which it entails" (p. 139). Certainly if these estimates are even reasonably appropriate the conclusion would appear to be justified. Yet the author makes much of a quotation from W. A. Lewis to the effect that "this is an exercise, not a prediction" but nevertheless utilizes his exercise to make a prediction.

On a more philosophical level, there have appeared in recent years studies purporting to demonstrate that the welfare loss due to monopoly is small, that the welfare importance of efficiency and production is exaggerated, and that gains from trade and the welfare gains from tariff reduction are almost negligible. Unless there is a thorough theoretical re-examination of the validity of the tools on which these studies are founded, and especially of the revitalized concepts of producers' and consumers' surplus, some one inevitably will draw the conclusion that economics has ceased to be important!

I should not want to conclude leaving the impression that this work is not a valuable addition to the literature on international trade. It is in fact a necessity acquisition for any economist engaged in the empirical evaluation of the gains from customs unions, and a useful work for the more general economist as well. There are numerous theoretical insights into elasticity relationships (in the appendixes); particularly useful in this connection is his extended treatment of value elasticities and elasticities of substitution in a multicommodity system. His theoretical models of classical theory should make excellent exercises for graduate students especially in view of their combination of geometric, algebraic and numerical techniques. Finally, one cannot but admire heroic attempts to quantify the gains from increased trade on such a high level of generality.

ROBERT A. MUNDELL

International Monetary Fund

An Essay on Trade and Transformation. By STAFFAN BURENSTAM LINDER.
New York: John Wiley & Sons; Stockholm: Almqvist & Wiksell, 1961.
Pp. 167. \$5.00.

This book by a young Swedish economist deals with two old and fundamental questions of international trade. One is the gains from trade, and the

other is the basis for trade. On both he has important things to say, and especially on the latter, some novel ones.

A country's gain from trade rests on both a consumption and a production effect. The latter, in turn, requires an internal transfer of factors. If factors can not be absorbed in an alternative sector after being displaced, the production effect must be negative. Depending on whether or not the consumption effect is stronger than the production effect, the effect of expanding trade on a country's welfare can be either positive or negative. Downward flexibility of factor prices, however, would permit continued employment of factors in the import-competing sector and leave the country with at least the consumption gain.

Here we meet Linder's u-country, in which there is lack of transferability, and the wage is at subsistence level. Real wages do fall in the import-competing sectors, where they lead to a population decline. In the exporting sector there is a rise of per capita income and population. The growing exporting sector produces an ever-greater share of the national product and ultimately there would be a gain of per capita income; but this adjustment might be a very long and painful one. And once committed to a high degree of specialization, such a country might be caught in periodic terms-of-trade squeezes, such as have beset the primary exporters.

Contrasted with the u-countries are the growth countries, which differ in being able to reallocate both consumption and resources instantaneously. The gain from trade increases the growth base which is compounded to give a new higher growth path. Here he distinguishes between gains from one-time reallocation and those from current allocation which increase the growth rate (p. 65). The latter he regards as especially important for such countries as Australia, Canada, New Zealand. Their rate of growth was augmented by the flow of technical contacts and information, the stimulus to entrepreneurship, the inflow of foreign capital, and possibly by the reduction of internal market distortions through international competition. Cited with approval in this connection are such writers as Haberler, Nurkse, Ohlin. He contrasts with this the infant-industry case for protection, which admits that the growth *base* because of adverse allocation might initially be smaller under protection, but claims that the growth *rate* would be higher than under free trade.

Linder puts forward an important new thesis on the basis for trade. Trade in primary products is correctly explained by differences in factor endowments. Trade in manufactures, on the other hand, is explained not mainly by differences in factors, but by similarity of demand patterns in the trading countries. Industries develop in a country because of the existence of potential home markets. An entrepreneur is more likely to gauge accurately a need on the domestic market, which is relatively familiar to him, than one abroad. New inventions available for exploitation will similarly be geared to some domestic need. Only when the home market has permitted the industry to attain a sufficiently large scale of operations does it become competitive on world markets. A developed industry in one country generally operates on an entirely different production function from an embryonic industry in another country. The strongest foreign market is then found in countries where per

capita income is at the same level and the composition of demand is about the same. It is, however, fairly easy for the direction of trade in particular manufactures to change, because a number of countries with similar income levels also have similar industrial structures.

The proposition above is subjected to a test given in two forms. This is to compare the import propensities between similar-income countries with those for dissimilar countries. In a tabular form of the test, countries are arrayed vertically and horizontally (top to bottom and left to right) in order of per capita incomes. If the thesis is valid there should be a tendency toward bunching of the high bilateral import propensities around the main diagonal. While there is no test of goodness of fit, inspection suggests that high propensities are in fact found between countries with similar per capita incomes. Scatter diagrams for individual countries, with import-propensities and per capita incomes on the two axes, suggest the same conclusion.

Linder is well aware of the forces tending to distort such a relation: cultural and political affinities and tariff preferences on the positive side; narrowness of geographic horizon and high transport costs on the negative side. But in the reviewer's opinion he has given us an important supplemental explanation for trade in the modern world.

Where does this leave the law of comparative advantage? For primary products resource endowments are undisputedly the basis for specialization and trade. For manufactures their role becomes distinctly smaller. In my view Linder's case is strengthened by the impact of modern technology. A century ago manufacturing activity was tied down to local supplies of raw material and fuel much more than today. Development of synthetics on the one hand and rapid advances in transportation on the other have weakened the old connections and made the geographic pattern of industry more flexible.

The foregoing proposition clearly does some damage to the factor-price equalization theorem. The main means for developing a favorable export position in some product is to have a strong home demand. This permits the industry to reach competitive size and develop an advanced technology. Relative factor abundances are not very important, says Linder, compared to size of home market and level of technology. If it's not necessarily the factor-abundant industry which expands, there's no reason to expect trade to make abundant factors scarcer.

In my view this pushes the argument a bit too far. Let us take the advanced countries together, including the top twenty-one in his list. The variation in per capita income from the United States to Japan is in a ratio of twenty to one. These two countries and most of those between have comparable education, health, and technology. There is a strong overlap in their industrial structures. An expansion of Japanese industries at the expense of agriculture appears to be taking place today at rising opportunity cost—labor has grown very scarce, and wages are rising, along with a growth in foreign trade. And with the growth of trade goes a further evening out of technology. It is hard to believe that her lower wages would not favor her relatively labor-intensive industries and in turn raise the wage level.

A final point deals with the relation of a country's economic size to its im-

port propensity. The hypothesis is that the larger is a country's total income, the more trading it does with itself internally, and the less it does relatively with the outside world. He tests this hypothesis graphically and finds that such a relation exists. But there is apparently no relation between per capita income and trading intensity; that is, countries with higher per capita income do not have higher import propensities.

This modest-sized book is a real contribution. Linder's main ideas give little to quarrel with; this reviewer differs only with his degree of de-emphasis of factor endowments, and along with it, his negation of the factor-price theorem.

FRANZ GEHRELS

Indiana University

Industrial Materials in Canadian American Relations. By BERNARD GOODMAN. Detroit: Wayne State University Press, 1961. Pp. xvii, 217. \$7.00.

This book is best described as a synthesis and extension of the commodity analysis and forecasts of the Paley Commission in the United States and the Gordon Commission (Royal Commission on Canada's Economic Prospects) in Canada. The scope is limited to those industrial materials which are imported into the United States from Canada. The main concern is with long-run forecasts of this trade. It is a useful little book because it pulls together commodity analyses from many sources. It is not a sophisticated study; no use is made of input-output techniques, nor of econometric models. Regarding items of which this reviewer has some knowledge, the forecasts appear to be reasonable. The book is quite well written and it is well-indexed.

Canadian exports of industrial materials to the United States are mainly forest and mineral products. After an initial sketch of the trade, each of the main items is considered separately, including lumber, pulp wood, woodpulp, newsprint, nickel, copper, aluminum, lead, zinc, iron ore, uranium, petroleum, natural gas, asbestos, titanium, platinum and gypsum. A standard procedure is followed in the analysis of each item. The past and current experiences are reviewed and then forecasts are developed. In each case, United States consumption, production, and total imports of a material are reviewed and forecast. From these estimates and from forecasts of United States imports from non-Canadian sources, derived demands for imports from Canada are obtained. The Canadian supply conditions are set out and related to these derived demands. Then, for each commodity some effort is made to check on the consistency of the elements in the forecast.

To an incredible degree forecasters are "prisoners of their times." For example, Goodman's forecasts for Canadian exports of forest products to the United States are less optimistic than were those of the Gordon Commission. In 1955 and 1956 when the latter group was at work the improving competitive prospects of United States newsprint production were still discounted heavily in Canada. By 1960, when Goodman wrote his book, the relative weakening of Canada's export prospects to the United States in forest products was more accurately assessed. Or was it? The same point arises regarding Goodman's scaling down of earlier forecasts of Canadian exports of alumi-

num to the United States. More generally Goodman's book reflects some of the doubts about the favorableness of Canadian long-term economic prospects which developed after 1957.

Goodman begs off from discussing most of the big issues of industrial materials in trade and economic development, even of Canadian-American economic development. This is fair enough. But there are some matters which he might reasonably have been expected to consider (and does not) within the scope of his study. First, he might have aggregated the forecasts of trade in the various items and examined the aggregates in relationship to the prospective size of Canadian national output and the over-all trading position. There is no way of being sure that the bits and pieces are consistent with one another unless some such procedure is applied. Moreover, nations are at least as much interested in their over-all economic position as in particular segments of the situation. Secondly, a particular long-term economic forecast of a twenty or twenty-five year trend cannot hope to provide a reasonably accurate view of prospects for a decade ahead. This is not an argument for abandoning twenty or twenty-five year forecasts. Rather, it is a plea for attention to "long cycles" in long-range forecasting work. The Gordon Commission forecasts (1956 and 1957) have thus far (1962) been misleading guides to Canada's experience. Goodman makes no systematic effort to work long cycles into his analysis.

DAVID W. SLATER

*Queen's University
Kingston, Canada*

Systèmes fiscaux et Marché Commun. By L. REBOUD. *Récherches Économiques*, Vol. 6. Paris: Sirey, 1961. Pp. v, 374. NF 24.

With the rapid progress of the European Economic Community (EEC) Mr. Reboud's book on the fiscal systems within this community comes at the right time.

Large problems and many difficulties will of course still have to be overcome before the Common Market area as the Treaty of Rome envisages it will be a reality. Reboud treats one of these: the problem of differences in fiscal systems. The book limits itself to one particular aspect of the fiscal systems, namely taxation. Expenditure policies and national debt problems are not investigated.

The author analyzes possible "distortions" which may arise within the EEC as a result of differences in taxation. By "distortions" the author has in mind influences which will interfere with the working of a competitive free market system and the flow of capital within the EEC area.

He distinguishes three kinds of distortions, those of a short-, medium-, and long-run nature. Although short-run taxation-induced distortions could be overcome through adjustments in exchange rates, these have much too general an effect and cannot take account of different tax burdens imposed on commodities. With fixed exchange rates, adjustments are too cumbersome to eliminate slight price discrepancies due to taxation. Flexible exchange rates,

if they should be reintroduced—which is unlikely—would have the same disadvantage and create in addition the possibility of distortions through speculation. The author dismisses, therefore, exchange-rate adjustment as a corrective force for differences in taxation, except for those cases where discrepancies are extremely large.

A second possible way of equalizing differences in taxation in the short run is to impose offsetting taxes on imports, as is actually done now. The difficulty with this method is that it is not certain what part of taxes contained in the price of the imported good is actually compensated. If, for instance, France exports a commodity to West Germany, the French will sell it free of sales taxes but the West Germans will impose their equalizing *Umsatzsteuern*. Other French taxes which are contained in the price, like income and property taxes, if shifted and recovered in price, cannot be accounted for. Therefore, the imposition of such equalizing taxes to compensate differences in tax burden is a crude and imperfect method. In many cases, they may actually be disguised protective tariffs. The author concludes, however, that in the short run, a "harmonization of taxes" through exchange rate adjustments for general and large differences and a system of equalizing taxes for selective use will be sufficient. The use of *Ausgleichsteuern* would, however, require the maintenance of controls over exports and imports which is one of the things the EEC is supposed to abolish. These methods provide, therefore, at best, a temporary solution only and must eventually be superseded by a better and more complete integration of the fiscal systems.

Reboud believes that the second stage of fiscal integration will require a coordination of fiscal policies. A policy of promoting price stability and full employment would be desirable. The author tries to assess the contributions the various tax systems could make to such a stabilization policy. To what extent such policies may necessitate an interference with the allocation of resources through a free market mechanism, which is throughout the book the guiding criterion, is unfortunately not brought into sharp focus. In the author's discussion of many of the topics in this context much more quantitative information than is actually available about EEC fiscal systems would have been necessary. Often he has to make bold guesses, and some of these are inevitably very speculative. When, for instance, the total incidence of the EEC tax systems is discussed, his statement that the progressiveness of these systems is about the same must surely be questioned. Very little is actually known about this.

The last section of the book deals with long-run implications of differences in taxation. The focus here is on capital formation in the private sector. The author devotes quite a few pages to the differential effects of the various inheritance taxes, and many readers will probably feel that he greatly overestimates the importance of these for capital formation. A discussion of the effect of income taxes on investment follows closely that in standard literature. The conclusion is that under the existing systems of taxation, long-run distortions in the structure of production in the EEC are inevitable because capital formation is favored differently in the private sectors. Capital formation by gov-

ernment—certainly large in France as well as in West Germany—as an important ingredient for the effective working of the future EEC is not investigated.

The merits of the book are that it informs the reader about existing differences in taxation in the EEC countries. It sets forth the legal provisions and discusses at length the economic effects of the various taxes as is done in better standard textbooks on taxation. There are interesting details about taxation in France, West Germany, and Italy. The subjects discussed range from the pyramiding of turnover taxes to loss offsets as factors influencing investment decisions. Most of the book is in fact a treatise on taxation, made interesting through international comparisons. This has the unfortunate effect that the central topic, namely what will happen to the EEC if these differences in taxation continue to exist, often gets only somewhat casual treatment.

One cannot help feeling that the author overestimates the danger of possible distortions through differences in taxation for the EEC. In the United States, differences in taxation in the various states do not seem to have caused too great disturbances. Variations in other cost items like transport, energy, and labor are evidently much more important for competitiveness than taxes. The situation will probably not be much different in the EEC.

There are no doubt some important discrepancies in taxation which should be eliminated. Adjustments will have to be made in turnover taxes and selective excises and one of the first victims may be the West German *Umsatzsteuer*. For other taxes this does not seem to be so urgent because they often have a similar effective incidence and create a comparable burden or have insignificant yields. As the EEC tax systems are the outcome of long historical developments and reflect different social, economic, and psychological attitudes, this reviewer can only agree with the author that for a complete fiscal integration of the EEC countries changes should be made, but they should be made slowly.

KARL W. ROSKAMP

Wayne State University

Business Finance; Investment and Security Markets; Insurance

Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity. By GORDON DONALDSON. Boston: Graduate School of Business Administration, Harvard University, 1961. Pp. xiv, 294. \$4.00.

Studies of corporate debt structure, financial risk, and capital cost have taken such divergent directions in recent years that an unfortunate gulf has developed between the empirical case approach and that of abstract mathematical theory. Donaldson's monograph goes a long way toward bridging this gap by utilizing system and orderliness in his case studies, realism and common sense in his theorizing.

The book is a veritable model of a research report. The first of the two parts is an account of a conventional funds-source and use analysis and of an inquiry into the policies which corporate officers follow (or think they follow) in managing their debt; the second is an analysis of their actual practices and

a demonstration of an ingenious method by which they might avoid a good deal of the arbitrariness inherent in generally accepted principles of borrowing.

Twenty companies constituted the universe of the investigation, four established firms in each of five industries: machine tools, baking, chemicals, ethical drugs, and rubber. It is clear that much careful and objective thought went into the selection of the sample, providing an ample base for generalization about a broad segment of U.S. industry. (Certain important areas were not represented in the sample—regulated industries, for instance, and financial firms—and so did not figure in the conclusions.) The research began with a study of the funds flows through the twenty firms during the period 1939-58, with emphasis on sources, internal as well as external. Interviews with the financial officers of the selected firms about their attitudes toward debt capacity brought out that their approach was somewhat stereotyped and not very deeply analytical. They cited several borrowing-policy standards, such as borrowing the maximum available at the prime rate, borrowing the maximum consistent with an A credit rating, limiting the long-term debt to some widely recognized per cent of total capitalization, or holding to some generally accepted earnings coverage of interest; but their standards manifested primary reliance on the judgment of others, especially creditors, and very little independent evaluation of their own.

Donaldson's own thinking about the effect of debt upon financial risk leads him to the conviction that of the various common approaches to debt standards the most useful lies in coverage analysis—not, however, in terms of earnings, but in terms of cash flow. In order to provide a rigorous demonstration of this approach he develops a system of equations—mathematical but not elaborate—which take into account the principal determinants of cash flow. Postulating that management will be able from past experience to provide quantitative values for these determinants reflecting their probable behavior in recession, he thus offers a means of evaluating the risk that cash flow may descend to the region of *cash inadequacy* and, in the extreme, to the point of *cash insolvency*. Debt service is treated as only one of the several factors. "The recession cash flow analysis is therefore seen to be a necessary preliminary to a whole set of financial decisions involving fixed cash outflows, and the opportunity for long-term debt financing clearly cannot be decided independently of other purposes to which a willingness to bear increased risk might be put" (p. 215).

Application of his method to five of the companies—one from each industry—leads him to conclude that the conventional types of debt capacity standards are outmoded and that balance-sheet and income-statement ratios are inadequate as guides to decisions on debt policy. He concludes, further, that if financial officers would use the cash-flow approach they might see more clearly that debt policy is only one of the factors bearing on the financial risk and thus reach their decisions less arbitrarily and more rationally. The argument and the evidence are both persuasive.

ROBERT W. MAYER

University of Illinois

Industrial Organization; Government and Business; Industry Studies

Competition in the Aluminum Industry: 1945-1958. By MERTON J. PECK.
Cambridge: Harvard University Press, 1961. Pp. vi, 227. \$5.25.

Until recently, most beginning students in economics first learned about monopoly by being introduced to the Aluminum Corporation of America. As Professor Peck's study makes clear, the time has come for economists to find another "real-life" example of the sole producer to serve their pedagogical purpose. Indeed, the aluminum industry has now so far degenerated toward workable competition that it is no longer a very good example of oligopoly.

The steps by which Alcoa's complete control of aluminum reduction capacity in 1939 gave way to a one-third share in 1958 are succinctly described. Since the courts resolutely refused to order dissolution or divestiture, the decline of Alcoa is traceable to legislation and what may be a new form of antitrust—"regulation through public opinion, the vague consequences of Congressional displeasure, and the policies of miscellaneous executive agencies" (p. 1). That competition—given any reasonable definition of the term—has increased in the aluminum industry over the last twenty years is clear enough. The interesting question is how much (if anything) the economy paid in lowered efficiency to secure this increase in competition. Peck declines to consider this issue directly, possibly because the evidence does not permit an answer in which one can have much confidence.

Each new entrant to the industry since 1939 has owed its start to the bounty of government agencies during the Second World War or the Korean conflict. Yet the jibe often made that competition in aluminum is the result of artificial insemination is misleading. The major rivals created for Alcoa by government favor—Reynolds and Kaiser—were, of course, chosen instruments of federal policy. But then in a war mobilization, every firm that is conscripted or created is a chosen instrument. Did the government choose wisely? Though Peck does not say it, his results permit the inference that we would have had cheaper aluminum during the Second World War had the expansion of aluminum capacity been entrusted to the old experienced monopolist. Likewise, if the efficient production of aluminum ingot had been the only goal, the surplus government plants should have gone to Alcoa after 1945. In defence of federal policy, it can be said that the learning period for a new ingot producer is not long; and that by the early 1950's, Reynolds and Kaiser were able to take care of themselves in a free market. "In 1949, Alcoa not only was considerably larger than Reynolds and Kaiser, but it had approximately a 10 per cent cost advantage and considerably greater financial resources. But, just as the relative size of Alcoa is now nearer the other two, Alcoa's cost and financial advantages have also declined" (p. 18).

Peck apparently accepts the view that the government decision to break Alcoa's monopoly on ingot production was a good thing. (A plain statement of the author's personal preference seldom intrudes in this book.) He has, however, no enthusiasm for proposals that would use federal power to force a further increase in the number of firms. His reading of the evidence indi-

a demonstration of an ingenious method by which they might avoid a good deal of the arbitrariness inherent in generally accepted principles of borrowing.

Twenty companies constituted the universe of the investigation, four established firms in each of five industries: machine tools, baking, chemicals, ethical drugs, and rubber. It is clear that much careful and objective thought went into the selection of the sample, providing an ample base for generalization about a broad segment of U.S. industry. (Certain important areas were not represented in the sample—regulated industries, for instance, and financial firms—and so did not figure in the conclusions.) The research began with a study of the funds flows through the twenty firms during the period 1939-58, with emphasis on sources, internal as well as external. Interviews with the financial officers of the selected firms about their attitudes toward debt capacity brought out that their approach was somewhat stereotyped and not very deeply analytical. They cited several borrowing-policy standards, such as borrowing the maximum available at the prime rate, borrowing the maximum consistent with an A credit rating, limiting the long-term debt to some widely recognized per cent of total capitalization, or holding to some generally accepted earnings coverage of interest; but their standards manifested primary reliance on the judgment of others, especially creditors, and very little independent evaluation of their own.

Donaldson's own thinking about the effect of debt upon financial risk leads him to the conviction that of the various common approaches to debt standards the most useful lies in coverage analysis—not, however, in terms of earnings, but in terms of cash flow. In order to provide a rigorous demonstration of this approach he develops a system of equations—mathematical but not elaborate—which take into account the principal determinants of cash flow. Postulating that management will be able from past experience to provide quantitative values for these determinants reflecting their probable behavior in recession, he thus offers a means of evaluating the risk that cash flow may descend to the region of *cash inadequacy* and, in the extreme, to the point of *cash insolvency*. Debt service is treated as only one of the several factors. "The recession cash flow analysis is therefore seen to be a necessary preliminary to a whole set of financial decisions involving fixed cash outflows, and the opportunity for long-term debt financing clearly cannot be decided independently of other purposes to which a willingness to bear increased risk might be put" (p. 215).

Application of his method to five of the companies—one from each industry—leads him to conclude that the conventional types of debt capacity standards are outmoded and that balance-sheet and income-statement ratios are inadequate as guides to decisions on debt policy. He concludes, further, that if financial officers would use the cash-flow approach they might see more clearly that debt policy is only one of the factors bearing on the financial risk and thus reach their decisions less arbitrarily and more rationally. The argument and the evidence are both persuasive.

ROBERT W. MAYER

University of Illinois

Industrial Organization; Government and Business; Industry Studies

Competition in the Aluminum Industry: 1945-1958. By MERTON J. PECK.
Cambridge: Harvard University Press, 1961. Pp. vi, 227. \$5.25.

Until recently, most beginning students in economics first learned about monopoly by being introduced to the Aluminum Corporation of America. As Professor Peck's study makes clear, the time has come for economists to find another "real-life" example of the sole producer to serve their pedagogical purpose. Indeed, the aluminum industry has now so far degenerated toward workable competition that it is no longer a very good example of oligopoly.

The steps by which Alcoa's complete control of aluminum reduction capacity in 1939 gave way to a one-third share in 1958 are succinctly described. Since the courts resolutely refused to order dissolution or divestiture, the decline of Alcoa is traceable to legislation and what may be a new form of antitrust—"regulation through public opinion, the vague consequences of Congressional displeasure, and the policies of miscellaneous executive agencies" (p. 1). That competition—given any reasonable definition of the term—has increased in the aluminum industry over the last twenty years is clear enough. The interesting question is how much (if anything) the economy paid in lowered efficiency to secure this increase in competition. Peck declines to consider this issue directly, possibly because the evidence does not permit an answer in which one can have much confidence.

Each new entrant to the industry since 1939 has owed its start to the bounty of government agencies during the Second World War or the Korean conflict. Yet the jibe often made that competition in aluminum is the result of artificial insemination is misleading. The major rivals created for Alcoa by government favor—Reynolds and Kaiser—were, of course, chosen instruments of federal policy. But then in a war mobilization, every firm that is conscripted or created is a chosen instrument. Did the government choose wisely? Though Peck does not say it, his results permit the inference that we would have had cheaper aluminum during the Second World War had the expansion of aluminum capacity been entrusted to the old experienced monopolist. Likewise, if the efficient production of aluminum ingot had been the only goal, the surplus government plants should have gone to Alcoa after 1945. In defence of federal policy, it can be said that the learning period for a new ingot producer is not long; and that by the early 1950's, Reynolds and Kaiser were able to take care of themselves in a free market. "In 1949, Alcoa not only was considerably larger than Reynolds and Kaiser, but it had approximately a 10 per cent cost advantage and considerably greater financial resources. But, just as the relative size of Alcoa is now nearer the other two, Alcoa's cost and financial advantages have also declined" (p. 18).

Peck apparently accepts the view that the government decision to break Alcoa's monopoly on ingot production was a good thing. (A plain statement of the author's personal preference seldom intrudes in this book.) He has, however, no enthusiasm for proposals that would use federal power to force a further increase in the number of firms. His reading of the evidence indi-

cates that barriers to entry are "very high" and, by implication, that these barriers are imposed by the heavy initial investment needed to begin efficient operation. He accepts (apparently) the argument, challenged by some authorities, that efficient ingot production requires vertically integrated firms. In any event, the addition of a few small firms is likely to have less effect on market behavior than the extent of the tariff on imports, the activities of the independents, and so forth. "Since entry, like everything else, has its price, public policy in these other areas, may deserve higher priority than extensive direct government intervention to encourage further entry" (p. 182).

Inevitably this study invites comparison with the subject's standard work by D. H. Wallace, *Market Control in the Aluminum Industry* (1937). The wealth of detail, manifest enthusiasm for the subject, and concern with policy alternatives that marked Wallace's book are not equaled here. In Peck's favor, it can be said that he tells us most of what we want to know about developments in the aluminum industry since 1945 with a minimum use of the jargon, quotation, and statistical minutiae that so often characterize "definitive" industry studies.

Add, also, that Peck offers a most promising contribution to the methodology of industry studies. In Chapter 11 an effort is made to relate the characteristics of aluminum firms to the type of research and development that they conduct. To this end, the inventions reported in trade journals from 1946 to 1957 are classified according to engineering category and place of origin (e.g. primary aluminum manufacturer, foreign sources). As the author notes, the conclusion that "even large firms focus their inventive activities in areas where the profits are relatively immediate and certain" is not surprising (p. 204). Nevertheless, it is reassuring to those of us who are constantly being reproved by publicists, sociologists, and our colleagues with cosmic interests, for maintaining a naive faith in the directive force of the profit motive.

DONALD DEWEY

Columbia University

Cartel and Monopoly in Modern Law. Reports to the International Conference on Restraints of Competition at Frankfurt am Main, June 1960.

Edited by the Institut für ausländisches und internationales Wirtschaftsrecht, Universität Frankfurt am Main and the Institute for International and Foreign Trade Law of the Georgetown University Law Center, Washington, D.C. 2 vols. Karlsruhe: C. F. Müller, 1961. Pp. xxx, 412; x, 604.

The adoption and administration of a fundamental economic policy, for both individual nations and international commercial affairs, rarely gets such a thorough discussion by such a distinguished body of experts as was given to the administration of antitrust legislation at the conference on restrictive trade practices and monopolies in modern law at the University of Frankfurt in June 1960. That policy, narrowly conceived, is one of preserving competition among business firms. Broadly conceived, and all the participants viewed it in its wider setting, the policy is one of obtaining all the economic, political, and social benefits of the greatest possible freedom for trade within a country and amongst the nations. Those who gave papers were divided

appropriately between members of the academic profession and leading administrators of agencies charged with enforcing antitrust policies in the various countries of Western Europe, the Common Market, and in the United States.

Whether out of deference to a common weakness of Anglo-American scholars in foreign languages, or because English is a universal language of economics, the papers in French and in German are translated into English. The papers given in English remain in that one language. In reading the translations, it is wise to check technical terminology with the original. Not all translators are economists.

While the title of these two volumes is *Cartel and Monopoly in Modern Law* (*Kartelle und Monopole im Modernen Recht*), the word cartel signifies restraints of trade, or collusion among firms—all sorts of collusion, whether in written agreements or simple understandings. Monopoly in the title signifies dominant power of a firm in a market. The subject matter is thus the legal doctrines about collusion of firms and about predominant power in a market.

European economic policy, as even the "man in the street" knows, has in recent years been dedicated to the proposition that the material wealth of each country and of its inhabitants can be increased by a greater degree of trade and specialization among the nations of that continent. That is the basic economic idea of the European Economic Community (the Common Market) established by the Treaty of Rome in 1957; and that idea was largely responsible for this conference.

The association between the policy of eliminating restrictions on international trade in the form of taxes and eliminating monopolistic practices is not generally brought to the forefront by the usual arrangement of academic courses; but the close association is often well stated and well developed in these proceedings, particularly by Eberhard Günther, head of the Cartel Authority of the Bundesrepublik, in his résumé of international trade negotiations from the early 1920's. While some attention is given to antitrust policy within individual countries, the major emphasis of this conference and of these papers is on international antitrust policy, particularly as this policy is formulated in the treaty establishing the European Economic Community and in the treaty establishing the European Coal and Steel Community. Because centralized, regimented economic systems border on many of the countries of Western Europe, and because the experience with legalized cartels is more immediate for many of the participants, the policy under discussion seemed much more crucial than it would in a country with an old legal tradition against monopolistic practices.

The first paper opening the conference, "Democracy and Economic Power," was by that long-time warrior against cartels, Franz Böhm who guided the 1957 legislation against restraints on competition through the legislature of the Federal Republic of Germany. Böhm's thesis is that of the pure liberal, namely, that concentrations of economic power are a danger to democracy and a violation of the principle of freedom and equity. For Böhm, economic freedom implies submission only to those costs which are necessary in production. Tyranny enters when costs can be imposed, or increased, by those having

any considerable degree of control over market prices and supplies. Böhm believes that market power leads to economic inefficiency, but his gravamen against collusion of firms and against monopoly power is the social and political danger that this power brings with it. All of this would have heartened a Brandeis, a Cardozo, or a Hand, for these men also realized that the exercise of legitimate legal rights might, on occasion, bring about situations on the markets which are deleterious to the general welfare. Böhm is suspicious of the legitimacy of all large agglomerations of economic power; and he fears their influence on the structure and actions of government. His ideas are clearly and forceably put, with perhaps a little more formalism than is usual in Anglo-American economic and political philosophy; but his insights are sharp and pertinent. The postulate that there is a close connection between political liberties and the structure of the economy—a postulate that Keynes accepted—is repeated by quite a number of those contributing papers, by Günther in his first paper, by von der Groeben, Hallstein, president of the Commission of the EEC, Ludwig Erhart, *et al.*

Since this conference was on modern national and international *law* regarding competitive behavior, the legal aspects of the economic policy receive very extensive and minute treatment. The legal side of this policy is often a very practical matter for lawyers and their clients; but there was no hesitation in speculating on what the law might be or ought to be. The legal aspects involve, in the first place, an examination of the precise meaning for different parties of certain concise constitutional formulations on collusion and on market power written into the treaties establishing the ECSC and the EEC. (In this brevity, the provisions resemble the Sherman Act.) The similarities and the differences in the basic provisions regarding competition of these two international economic units are extensively examined by a number of contributors—differences in the rôle of competition, in the control over mergers and consolidations, market power, etc.

The lawyers were also interested in the relationship between the laws in the various countries of the Common Market, termed “municipal law” in these reports, and the treaty provisions. If the treaty provisions are stricter than the law of a country, which prevails? And under what precise circumstances? When does a restraint of trade affect trade within the area of the Common Market? Which authorities, national or international, are competent to take action against restraints and predominant power? And what action or actions? How is uniformity of interpretation of the treaty provisions to be achieved? Who has power to investigate suspected contraventions, and how far does this power extend? What is the relation of private civil law, or the rules governing the relations between business firms, and the international law? Can a firm enforce a contract with another firm that violates policy established by international law? What exemptions from the policy of competition are present and what do these exemptions mean? What if the law of one member state is stricter than the international treaty provisions? To what extent can courts of one national exercise jurisdiction over firms domiciled in other nations but, in some way, affecting international trade and the first country’s domestic market? (The lawyer specializing in the conflict of laws

will have plenty of business!) Further, what about vertical price fixing? International patent licensing? What happens when the laws of one country expressly permit export cartels? To whom are appeals against administrative decisions on the legality of actions or conditions to be made?

These are some of the thorny legal points that will inevitably come up with the attempt to make Europe more of an integrated economic unit, while preserving the sovereignty of each country. As complicated as the problems are, there seems to be a strong will to solve them, together with patience to work out solutions.

Certain papers on the meaning of provisions against discrimination in the EEC and the ECSC treaties may be of more technical interest to economists. When is a difference in price evidence of monopoly power, and when is it an indication of the varying stresses of competition? Mestmaker, who is thoroughly familiar with U.S. law on this matter, gives an excellent analysis of the probably insoluble problem of the precise specification of unwanted discrimination. Raiser considers the issue of refusals to trade and monopolistic power in U.S. and German laws.

These were significant contributions by U.S. experts; but papers by Americans are being neglected in this review, since their contents will be more familiar to the American reader. There is an excellent survey of U.S. law by Irston Barnes, a paper on concentration by Tait; and papers by Rashid, Schwartz, Kronstein, and Kingman Brewster, Jr., while Corwin Edwards gives a penetrating report on a working-group discussion.

As is usual when measures for carrying out a policy are being discussed, some recalcitrants take a few pot shots at the policy itself by their suggestions for putting the policy into effect. In this conference, there were murmurs, most audible among the French participants, favoring the propositions that stability of price through collusion is also an economic benefit, that large size has its advantages, that the firm with dominant power may be able to afford more for research and technical advance, and that the giant firm is evolving into a public service institution.

The predominant tenor of the conference, however, was completely skeptical of the benefits of business collusion; and the whole purpose was to formulate those precise circumstances under which it could be reasonably presumed that collusion is generally an evil and therefore to be banned per se. The choice is between establishing general rules stipulating conduct which is forbidden and that which is allowed, on the one hand, or relying on administrative action when evil results or restrictions on trade arise. Those who wanted to permit collusion and monopoly power and rely on administrative agencies to check abuses of such power were here in a minority. Lawyers who are not perverted by a belief in the evils of competition probably have a predilection for rules rather than for administrative action, particularly when evidence is so difficult to obtain and conclusive results so difficult to establish. When it comes to oligopoly and market power, the law is still unable to write bounds for an elusive phenomenon; so, for want of ability to set down general rules, authority is given to intervene in case of abuse of market power.

After perusing these two volumes of proceedings containing many learned and highly technical papers, each worth a review by itself, the economist must come away with mixed emotions. He must be struck by the extent to which the establishment and the execution of a fundamental economic policy rests, not with economists, but with the legal profession. Even on technical matters like the rules of competition, the economist is displaced by the lawyer. Do economists as a profession suffer from fatigue at the dull task of formulating in written statements precise prescriptions for an economic policy, or are they fatigued by the task of interpreting the meaning of a rule for specific situations? Whatever justification the economist may give, an acute French lawyer chided economists for not giving more aid in the difficult problems that the lawyer is facing; and Barnes made a depreciating reference to the economist's preference for playing with models rather than tackling the problems of specifying the proper area of competitive behavior.

Another matter which will strike the economist is the extent to which the economic structure is an organic unit as Marshall conceived it. One cannot touch one part without a reaction in other parts. International antitrust policy is connected with many other features of national economic policy. It will be affected by the tax policies of individual states, by monetary and fiscal policy, subsidies, dumping, government enterprises, foreign exchange rates and foreign exchange controls, etc. Each one of these may affect the competitive position of firms in relation to each other. This interrelationship was alluded to in several papers, but perhaps an economist was needed to give emphasis to the interdependence of all economic measures.

Finally, every economist with any sense of economic history must be impressed, after reading these volumes, with the *Müh und Weh* which is involved in attempting to establish, or rather re-establish, by treaties and by international economic agencies that economic unit which was Europe before the First World War. The destruction of that unit is what Keynes so vehemently protested against in his *Economic Consequences of the Peace*. Now, after a Second World War, statesmen with far more vision acquired by experience are attempting to rebuild that unit to obtain the benefits of trade which Adam Smith pointed out so long ago in his *Wealth of Nations*.

RICHARD C. BERNHARD

*University of California
Riverside, California*

Regulation and Competition in Air Transportation. By SAMUEL B. RICHMOND.
New York: Columbia University Press, 1961. Pp. vii, 309. \$7.50.

For those familiar with the recent literature on the economics of air transportation, one can convey a good deal about Professor Richmond's book by saying that it follows more in the Cherington tradition than in that of Wheatcroft: it is long on description and short on analysis. Perhaps Richmond's greatest contribution flows from the easy-going—even entertaining—manner in which he treats the history of U.S. commercial air transportation. For this reason alone, the book will have considerable appeal in some quarters.

The over-all objective of Richmond's book is to explore the interaction and interrelationships between regulation and competition. In a highly regulated industry competition is nevertheless recognized as desirable, even essential; the problems arise when one attempts to specify how much and what kind of competition. Richmond traces the changing views of the regulating agency over time and as the economic character of the industry changes. He spells out quite traditionally the basic concept of competition and discloses the forms of competition possible and prevalent in air transportation.

With considerable detail, the author also covers the methods which the Board can employ to "create" and control competition. He then illustrates and discusses the Board's capriciousness with respect to the use of competition as an efficient instrument for bringing about a rational commercial air transport system.

At the end of his book, Richmond focuses upon a specific period—1955 to 1957—and digs into masses of statistics, Board decisions and other material to determine the Board's "criteria for competition" and its bases for selecting specific carriers to introduce service between given pairs of cities. Finally, the author surveys the competition resulting from the 1955-1956 brace of route awards to determine if and to what extent the Board's pre-decision objectives were achieved.

Richmond usually asks the pertinent questions, but too often either furnishes no answers or employs the technique of assertion-without-proof. For example, while discussing "the rationale for regulation," Richmond raises the crucial question whether air transportation is naturally monopolistic and asserts that it is without a shred of proof. Then, throughout most of the book, he takes as given that which has been proven only by assertion.

The extent to which assertion is substituted for analysis is again indicated by the following sentence appearing in the course of a discussion of the general nature of competition: "As long as the number of firms in the industry is sufficiently large to assure the effectiveness of competition in individual (city-pair) markets, the actual total number of firms in the industry is not a matter of great economic importance." The author certainly ought to recognize that the actual number of independent firms in a monopolistically competitive industry can indeed have tremendous economic importance. For example, fewer trunk airlines would find it easier to agree on such things as the appropriate rate level and rate structure and might readily and collusively reach decisions as to what are and what are not "acceptable" avenues of competition. Also, a reduced number of buyers for transport aircraft could easily have a profound effect upon the types of aircraft manufactured and upon the industry's general propensity to innovate.

One of the most serious criticisms of Richmond's study is that it deals almost entirely with supply-side considerations and only rarely with demand. For instance, when discussing the notion of "excessive competition," the author is concerned only with the impact of route competition on airline costs, ignoring entirely the relationship between the level and character of competition and the demand in a city-pair market. This is particularly regrettable because the statistical techniques Richmond employs make it possible to draw

some interesting conclusions about the effects of new route competition upon demand.

Again, when considering the problems attendant to the subsidization of weak routes with the revenues from stronger ones, Richmond often fails to recognize that internal subsidy may be a means of maximizing long run profits. Instead, he usually focuses on such behavior only in a short-run context. Also lacking is discussion of the explicit position of the Civil Aeronautics Board with respect to internal subsidy. This shortcoming appears most dramatically when the author notes the practical necessity of internal subsidy but completely ignores the fact that the Board's creation of competition on the rich routes could have the perverse effect of increasing carrier costs on such routes to the point where internal subsidy in the long run becomes impossible.

In general, Richmond is not critical of the Civil Aeronautics Board and its policies toward competition. It is not entirely clear why this should be the case, particularly since the author often accurately describes Board policies which, for an economist, must surely be anathema. For example, in citing the level of intercity traffic as one of the several criteria employed by the Board in determining the proper measure of competition in a city-pair market, Richmond is cognizant that the thresholds of traffic which the Board employs change very little with time in spite of the fact that the basic economics of the industry—the production function of air transport—has itself changed drastically through time, making changes in Board policy mandatory if the results contemplated by the Federal Aviation Act are to be obtained.

Richmond does provide some clever and useful insights into the problems of regulating a new mode of transportation. One of his most attractive concepts is that of "The Life Cycle of City Pairs." Without question, consideration of the Civil Aeronautics Board's attitude toward competition is more meaningful when viewed in the light of the stage of development in which a city-pair market is found. Those interested in transport economics will find this "life cycle" approach useful in numerous ways.

Richmond states explicitly that the purpose of this book is "to define the criteria and standards which the Board used in its decisions to increase the amount of authorized competition." He discusses in detail route awards from late 1955 onward and uses masses of data which were punched on IBM cards and analyzed, grouped and re-grouped through sorting processes in order to display the *ex post* effects of the Board's creation of competition. He compares the *ex post* data with the intent of the Board as Richmond adduced it from the formal decision which "created" the competition. Of necessity, the determination of the intent of the Board is largely subjective and opens to question the efficacy (and value) of comparing "hard" (and *ex post*) data with a "soft" (and hypothetical) assumption. But for all the traffic data compiled by the author or otherwise available to him, at no point are pre-1955 and post-1955 concentration measures systematically given. Therefore no specific evidence is presented as to whether the Board succeeded in reducing concentration in the trunkline portion of the air transportation industry.

Towards the end of his book, Richmond offers a caveat that not too much

reliance can be placed on the type of statistical evidence upon which the analysis of the book is very much based. The author clearly recognizes the situation: the statistics are often misleading. With this, one cannot argue,

AARON J. GELLMAN

Glencoe, Illinois

Die Konzentration in der Wirtschaft. Edited by HELMUT ARNDT. Schriften des Vereins für Socialpolitik, 3 volumes. Berlin: Duncker & Humblot, 1960. Pp. xv, 781; vi, 678; iv, 463. DM 78.60; 69.80; 58.60.

This important work contains a collection of approximately sixty articles submitted in September 1960 to the conference of the Verein für Socialpolitik which dates back to 1872.

The work is divided into three parts. Volume 1 (781 pages)—the present state, causes and effects of concentration—is mainly descriptive and gives a very general idea of the various aspects of the problem, from the concentration of industry to that of income and wealth. Although a major part of this first volume is devoted to the study of the German economy, it also includes articles on other countries, notably by P. E. Hart for the United Kingdom and Carl Kaysen for the United States, but without any effort towards international comparisons. There is valuable information in the different articles, but the statistical data would have been of more value had it been less dispersed. The part played by government and other public bodies in economic activities is also considered here, somewhat unexpectedly.

Volume II (678 pages) deals with the causes of concentration in its technical, legal, social, political and taxation aspects. It is rather difficult to determine whether it is question of the influence of these different factors on concentration or vice versa. The study on the United States by J. M. Blair constitutes however, an exception to this observation. Many of the articles in this section would be more appropriate in Volume III.

The final volume is in fact short (320 pages), but deals with the effects of concentration on a great diversity of items, such as costs, shareholders' rights, industrial location, democracy, economic development, advertising, public knowledge of the business world, etc.

Generally speaking, more attention could have been paid to the classification to the different subjects in the three parts, and even to the criteria chosen for these main divisions. But this is a minor defect. With regard to the basic problem, there are two all-important considerations: how far exactly does the scope of the subject extend, and what contribution does this work make to the statistical analysis of concentration?

As far as the first point is concerned, there may be some confusion in the U.S. reader's mind, accustomed as he is to a more limited conception of concentration: industrial concentration. Even restricted to this field, there is further risk of misunderstanding; the connection between competition and industrial concentration has not been clearly defined. Several legal articles, including a very good one on mergers (E. J. Mestmäcker), compare various features of different national laws regarding corporations. One paper on trade agreements (H. König) describes the evolution of cartels in the German econ-

omy as a whole and in certain sectors or markets. But, unfortunately there is no general economic study on mergers in Germany, such as those by J. F. Weston or R. L. Nelson for the United States.

With regard to the second point, the measurement of concentration, the reader will be well satisfied. The article by H. Kellerer, of Munich, is a comprehensive and painstaking survey of the major contributions to the statistical literature. It may perhaps be regretted that only a passing mention is made of the controversy (S. J. Prais-M. A. Adelman) between the two kinds of methods of measurement, concentration *vs.* inequality. G. Fürst, Head of the Federal Statistical Office in Wiesbaden, clearly adheres to the first type in an article which contains the most complete statistics on the concentration of firms and plants in Germany.

There is no doubt as to the value of Arndt's work. For the layman interested in concentration—and the recent inquiry ordered by the Bundestag has popularized the subject—this book will constitute a useful source of information. The same is true for those outside Germany who have no access to official statistical data. Moreover, this book represents an important contribution to the knowledge of present German industrial structure.

JACQUES R. HOUSIAUX

Université de Nancy

Land Economics; Agricultural Economics; Economic Geography; Housing

Natural Resources and Economic Growth. Edited by JOSEPH J. SPENGLER.
Washington: Resources for the Future, Inc., 1961. Pp. xii, 303. \$3.50.

This volume is the proceedings of a conference held at Ann Arbor, Michigan, in April 1960 under the sponsorship of Resources for the Future, Incorporated, and the Committee on Economic Growth of the Social Science Research Council. The authors and discussants of the various papers were struggling with a series of complex and weighty questions: What has been the role of natural resources in determining the rate of economic growth of nations and regions? What is it likely to be in the future? Is specialization in the export of primary products likely to be conducive to the development of an underdeveloped country? What should be the objectives of public policy toward natural resources and to what degree have they been accomplished? With a few exceptions, these questions suffered only superficial bruises from the attack by the conference participants.

A major recurring theme of the conference was that technological change has progressively reduced the importance of a nation's resource endowment as a determinant of its rate of economic growth, and that the process of economic growth itself tends to result in a further reduction. A second theme, partially conflicting and partially complementary to the first, was that the particular historical composition and geographical distribution of economic growth has been, and continues to be, significantly influenced by resource availabilities. The first position is defended most strongly by T. W. Schultz, who points to the effectiveness of technology in forestalling the appearance of

a shortage of agricultural land in the United States, and by J. H. Adler, who emphasizes the "passive" role of resources as the "object of development." In developing the second theme, H. S. Perloff and L. Wingo make a strong case for the historical importance of the resource endowment as a determinant of the course of economic growth in the United States. Spengler, in his excellent "Summary, Synthesis and Interpretation" of the conference, also emphasizes the historical role of resources in shaping growth. Additional comments along this line were made by some of the discussants, most notably and incisively by W. N. Parker.

Chandler Morse and H. J. Barnett contribute a theoretical analysis of the validity of the Malthusian and Ricardian views of resource scarcity under conditions of no exogenous technological change. Although their model has some shortcomings—in particular, it assumes zero foresight and thereby waives completely the problem of intertemporal allocation—it serves as a useful framework for clarifying the concept of resource scarcity and cataloging the qualifications to the Malthusian and Ricardian views. McGann's paper is a freewheeling tour into the distant future. His exercise in fearless growthmanship suggests that present and presently foreseeable technology probably can turn the world into a densely populated (materialistic) Utopia in the course of several centuries, but achievement of this goal will require appropriate policies, which may not be forthcoming. J. S. Bain provides a useful review and critique of natural resource policies in the United States.

The success of the Perloff-Wingo, Morse-Barnett and McGann papers stems in part from the fact that their approach is theoretical and/or quantitative; and this approach provides a degree of clarity in the framing of questions that is lacking in most of the rest of the volume. Unfortunately, theoretical precision is often absent even at points where it could readily be achieved. The discussion of the "importance" of resources in economic growth suffers from repeated failure to make an elementary distinction between the functional relation $g(R)$ connecting the resource endowment and the growth rate, and the "marginal product" of resources in terms of growth when the resource endowment is R_0 , $g'(R_0)$.

Even if clarification of this relatively simple matter had been achieved, the discussion of many important issues would necessarily have remained qualitative and impressionistic for want of a fully adequate theoretical framework. Such a framework should clarify the relationships between economic growth and such influences as (a) the rates of technological changes in resource industries and elsewhere, (b) the uncertainty about the course of such change in the future and about the existence of additional supplies, (c) the extent of foresight in the anticipation of resource scarcities and the mechanisms by which such anticipated scarcities are reflected in markets and in public policies, and (d) the extent to which economic growth may be freed from resource constraints by substitution possibilities in production and by income and price elasticities of demand. Finally, of course, it would be desirable to have all of this analysis incorporate locational factors. This is obviously a tall order. It seems to this reviewer that it will have to be met

if understanding of the relationship between natural resources and economic growth is to progress much beyond the unsatisfactory level revealed at the Ann Arbor conference.

SIDNEY G. WINTER, JR.

Council of Economic Advisers

Labor Economics

The Structure of Collective Bargaining. Edited by ARNOLD R. WEBER. New York: The Free Press of Glencoe, for the Graduate School of Business, University of Chicago, 1961. Pp. xxxii, 380. \$8.50.

The pure theory of value leaves little room for decision-makers; the logic of markets determines all. Yet when economists assess the significance to public policy of the roles played by the parties to collective bargaining, informed opinion runs a wide gamut. Bargaining is sometimes seen as a mirror of events it cannot touch; or as a transmission line for forces it can but slightly alter; or as a catalyst in whose presence change may quicken or slow; or as a prime mover of the economic order.

Probably bargaining has not generally or consistently influenced all of the variables prominent in economic analysis: wage-price levels, functional shares, geographic and occupational differentials. Evidence from empirical studies is certainly ambiguous. But that bargaining has affected these variables in the short run and that it continuously impinges upon the economy in other crucial ways is a major and reasonable premise of such studies as *The Structure of Collective Bargaining*.

As defined in the Introduction, structure means size of the negotiating units in terms of the number of employees and firms; industrial, occupational, and geographic scope of the units; locus of authority within units—and without units in instances of governmental authority; and relationships among units. With much skill and occasional daring, the contributors to this volume have put together an authoritative source of information on the complexities of bargaining structure.

Part I deals generally with the determinants of bargaining structures (Neil W. Chamberlain) and with recent trends in the growth and scope of units (E. Robert Livernash). In one of several excellently edited discussions, Dunlop develops important distinctions that are to inform much of the later writing: the election district defined by statute (and called "bargaining unit" in the law); the negotiation area or constituency for whom bargaining is carried on; and the broader area of impact of negotiations. Legal and economic misconceptions have resulted from failure to make these distinctions.

Part II takes up management's bargaining objectives as related to structure (Edward L. Cushman and Herbert R. Northrup in separate pieces). Here we find forceful expressions of management's view that bargaining (negotiating) units ought to be limited to individual companies or to "profit centers" within companies. How this might be accomplished is not spelled out.

The discussion that follows shows how questions about centralization of bargaining are related to questions about democracy within unions. Several memorable passages will be often quoted in future writing on this subject. Herbert R. Northrup, until recently a consultant to General Electric, holds forth on the Company's dedication to union democracy:

However, under General Electric's policy we prefer to have a democratic union. Then if we have a situation where we'd like to see the membership overturn the position of the union leaders, we can put constant pressure on the union to subject the various issues to a membership vote. We can also encourage the people to go to the union meetings and vote.

A little later on, J. Wade Miller of Dewey and Almy Chemicals points out that many corporate officials would prefer to deal with highly centralized unions who can assure ratification of terms by the membership. Northrup rejoins: "I would agree with you—except for GE. Democracy has paid off for us."

The remainder of Part II is an analysis of data that bear upon the actual size and scope of bargaining units in the United States (Peter Henle) and unions' perspectives on centralization (George W. Brooks). Two interesting and somewhat conflicting views here are Henle's doubts about the extent of a trend toward centralization of bargaining and Brooks' contention that such a trend does exist, that management often promotes it, and that unions must resist it if they would preserve the grass-roots vitality of the labor movement.

Part III examines problems of bargaining in five industries and one company: meat packing (Ralph Helstein), steel (William G. Caples), chemicals (J. Wade Miller), airlines (Charles M. Mason), construction (John T. Dunlop), and International Harvester (Robert B. McKersie). The differences among these industries are so substantial that the reader is presented with fascinating opportunities for cross-comparisons with respect to technology, governmental constraints, labor organization, and market structure.

The paper by Caples (of Inland Steel) and the discussion that follows between him and George W. Taylor, who was chairman of the 1959 Steel Fact-Finding Board, provides valuable material, and as might be expected, defines the issues sharply. One of the pressures bearing upon the 1959 negotiations—or upon the reluctant negotiators—is brought out in Taylor's reference to the government's attempt to use "the steel industry as a vehicle for the development of a national wage policy," a policy based upon the criterion of productivity. The impact of steel negotiations upon wages throughout the basic industries has obvious importance to the structure of bargaining in these other industries. Unfortunately, this impact is not dealt with at any great length.

Dunlop's treatment of construction continues his penetrating analysis of this industry and his attempt to work out implications for a general theory of industrial relations. There is an excellent description of the way forces from labor and product markets condition the bargaining structure with respect to regions, crafts, and branches of the industry. Illustrating these

forces, the author cites the function of prohibitions against piecework and of uniform jurisdictional rules, both serving to standardize labor costs over an area and placing the burden of competition among enterprises upon such other factors as managerial efficiency.

In Part IV of the book, Douglass V. Brown and George P. Shultz discuss public policy and the structure of bargaining. The authors show how the absence from policy of any clear intention to affect structure has led to confusion in statutes, court interpretations, and NLRB decisions. But beyond an endorsement of industry-wide bargaining and of the notion that somehow employers should have a voice in the designation of the appropriate bargaining unit, there are few guidelines laid down for a clearer policy.

The conclusion of the book is George W. Taylor's essay on bargaining in transition, a fine work of criticism and proposal. Collective bargaining is a liberty to select and define problems, writes Taylor; it is not a rigidly constituted institution. Therefore, it was a mistake to set down "refusal to bargain" as an unfair labor practice since this requires a definition of bargaining and a curtailment of liberty. In a similar vein he criticized the Bill of Rights of the Landrum-Griffin Act. A discussion of national emergency strikes and, more generally, of the obsolescence of the strike weapon round out a stimulating presentation.

A final, satisfying impression gained from this valuable book is this: the study of industrial relations as practiced by experts has progressed well beyond the stage when the distinction between institutional and theoretical approaches—and reproaches—was held to be especially fruitful. Major issues do not permit analysis without attention to both economic theory and the institutional context of its operation.

JOHN E. MAHER

Michigan State University, Oakland

Wagakuni chingin-kōzō no shiteki kōsatsu (A Historical Study of Japanese Wage Structure). Prepared by Shōwa Dōjin Kai. Tokyo: Shiseido, 1960. Pp. xv, 550. ¥2,000.

The authors of this volume are ten members of the committee on wage structure of *Shōwa dōjin kai*, a research organization composed of interested university professors and research economists associated with government and business.

The primary objective of the book is to elucidate the socio-economic forces which have shaped the present Japanese wage and employment structure. Part I summarizes quantitative indicators of wages, employment, and wage differentials as time series or, in some cases, as values for selected years from the past fifty years. Part II describes the evolution of labor markets and wage payments over the entire period of modern Japan (officially dating from the Meiji Restoration of 1868). Part III discusses the major sources of data and presents detailed tables of wages and employment by industry, occupation, firm, and geographical division, together with other useful historical statistics. The appendix reproduces the long-neglected but extremely im-

portant investigations by the Japanese government of wage-payment practices current in 1922.

Part II is the core of the volume. It is a detailed historical study of the changing characteristics of Japanese labor markets and wage-determination practices. The study has far-reaching significance, for it destroys, once and for all, many of the unsound interpretations of Japanese wages, employment, and industrial relations since the Second World War.

In addition to collecting, reproducing, and annotating the important wage and employment data and historical documents, the authors have examined the relationship between changes in average real manufacturing earnings on the one hand, and changes in aggregate economic activity, employment, and labor productivity on the other (Part I, Ch. 1). The results are disappointing; no significant relationship has been found between earnings and any one of these variables. However, the authors do not appear to appreciate the serious implications of these negative results. If they were to be taken seriously, they would compel us to explain the behavior of Japanese wages independently of the variables ordinarily deemed relevant. The fault lies with their handling of the correlation analysis.

It is found that Japanese wage differentials, like their counterparts in other countries, tend to narrow or widen as economic conditions improve or deteriorate (Part I, Ch. 2). In explaining these variations, however, the authors advance an untenable hypothesis of leads and lags among occupations, industries, and geographical areas. It is alleged that wage increases first take place in the key occupations belong to expanding industries in major urban centers and spread to other occupations, industries, and regions, and that wage differentials widen during the first stage and narrow as the laggards catch up to the leaders (p. 154). This hypothesis would make wage differentials widen during prosperity and narrow during depression, contrary to evidence.

Quite often, the authors go beyond the permissible range of inference from the data presented. At one point, it is argued that wages for various occupations were competitively determined in the market prior to the 1930's but that the ability to pay of a firm or industry has since been a predominant factor in wage-determination (pp. 101-2). Strangely enough, this is said to follow from the observation that the rank correlation coefficient for various occupations between a given earlier year and a later year decreases as the interval of the correlated pair of years increases. Further, it is alleged that wages at or near the bottom of the wage structure are regulated by agricultural wages and rural living standards (pp. 103, 153). The role of agriculture as a *deus ex machina* that determines the floor of the wage structure is not consistent with the analytical framework of general interdependences espoused by the authors. Curiously, there is no systematic examination of variations in intersectoral wage differentials.

Despite these analytical shortcomings, this volume contains sufficient data to engage interested economists in further rigorous analyses of the Japanese wage and employment structure for many years to come.

KOJI TAIRA

University of Washington

Related Disciplines

The London School of Economics and Its Problems, 1919-1937. By LORD BEVERIDGE. London: George Allen & Unwin, 1960. Pp. 138.

The scope of this interesting volume is the period when Sir William Beveridge was director of the London School of Economics and Political Science (L.S.E.). During this time a suitable building was found for the school in the Bloomsbury area of London; economics as a field of study was defined in scope and method; political activity was successfully pursued by distinguished faculty members; and academic self-government was won. These years were described by Sidney and Beatrice Webb, who had established the School in 1895, as its "re-foundation."

It is well to remember that the School, as described by Sidney Webb, was originally "two small hired rooms in John Street, Adelphi, destitute even of a promise of endowment, without professors or students, and devoid of any visible chance of academic status." Today it is an institution of international reputation known not only for its range of curriculum offerings in the social sciences, for its research and library facilities, and for its distinguished (and controversial) faculty. The student body is drawn from all parts of the world, more recently from the less developed countries.

A number of articles have been written about the School, but I have not found any that captures the academic vitality and challenge which the School and its program conveys to British and overseas students alike. Lord Beveridge's volume is more successful, but it is hoped that someone, some day, may write a full-blown, well-documented history of what is affectionately known throughout the world as the "L.S.E."

Many famous lecturers have graced the School's classrooms including Clement Atlee, Arthur L. Bowley, Edwin Cannan, Hugh Dalton, Goldsworthy Lowes Dickinson, Lawrence Dicksee, Herman Finer, Herbert Foxwell, Theodore Gregory, Edward Jenks, Lilian Knowles, Harold Laski, Bronislaw Malinowski, Arnold Plant, Lionel Robbins, Arthur Salter, Richard Tawney and Graham Wallas. They represent a veritable WHO'S WHO in the British social sciences.

The achievements of Beveridge were apparent in the establishment of the Commerce Degree; in the emphasis on research as well as on teaching as a professor's charge; and in the establishment of a link with the United States. Beveridge did not succeed, however, in implementing the Webbs' belief that economics was not "an analysis of concepts but an inference from facts of society after unsparing examination."

While director of the School and thereafter, Beveridge held the opinion that it is "irrational to study society without studying the human material from which society is made." His experiments in this direction were generally unsuccessful. "Even after forty-two years," Beveridge writes, "the London School of Economics and Political Science had not achieved the purposes for which Sidney and Beatrice Webb had brought it to birth—the purposes of breaking up economics and making it a science in the true sense of that word, and the purpose of making the circle of the Social Sciences complete." But

he adds that the School had, with the neverfailing support of the Webbs, "become a rather wonderful place."

The last chapter of Beveridge's book arises from a lecture given at the School to celebrate the Centenary of the Webbs. Here he tells something of his forty years' friendship with the founders, a friendship which was not marred by differences of political opinion or social outlook.

Those who wish to study the School's developments further may do so in Beveridge's book, *Power and Influence* (New York, 1955); Margaret Cole's *Beatrice Webb's Diaries, 1912-1924* (New York, 1953); and Frederick Hayek's "The London School of Economics 1895-1945," *Economica*, February 1946.

FORREST H. KIRKPATRICK

Wheeling, West Virginia

TITLES OF NEW BOOKS

General Economics; Methodology

ANDRIESSEN, J. E. AND MEERHAEGHE, M. A. G., ed. *Theorie van de economische politiek.* (A systematic survey by Dutch and Belgian authors of the theory of economic policy.) Leiden: Stenfert Kroese, 1961. Pp. 472. f 28.50.

BEACH, E. F. AND WELDON, J. C., ed. *Canadian Political Science Association conference on statistics 1960, Queen's University, Kingston, Canada—papers.* Toronto: Univ. of Toronto Press, 1962. Pp. x, 314. \$6.

FISHER, F. M. *A priori information and time series analysis. Essays in economic theory and measurement.* Amsterdam: North-Holland Pub. Co., 1962. Pp. xii, 166. \$5.

GIERSCH, H. *Allgemeine Wirtschaftspolitik.* Vol. 1, Grundlagen. Wiesbaden: T. Gabler, 1960. Pp. 356.

GITLOW, A. L. *Economics.* New York: Oxford Univ. Press, 1962. Pp. xxii, 743.

LAUTERBACH, A. *Psychologie des Wirtschaftslebens.* Reinbeck bei Hamburg: Rowohlt, 1962. Pp. 149. Paper, DM 2.20.

LEPSIUS, M. R. *Denkschrift zur Lage der Soziologie und der politischen Wissenschaft.* Im Auftrag der Deutschen Forschungsgemeinschaft. Wiesbaden: Franz Steiner, 1961. Pp. 149.

LERNER, A. P. *Everybody's business.* East Lansing: Michigan State Univ. Press, 1961. Pp. 134. \$3.75.

This is a series of radio talks, revised and enlarged, given at Roosevelt University, Chicago, in 1950.

The author says: "Although the book is intended in the first place for the general reader who has not taken any courses in economics, as well as for use in secondary schools and adult education classes, I have not kept away from the controversial. For this reason, among others, I believe the book will also be of interest to advanced students and even to teachers of economics in the universities." Among the subjects are: "What is a Fair Price?" "What is Wrong with Monopoly?" "How the Money Goes Round—Prosperity, Depression, Inflation." There are fifteen short essays altogether.

MARK, S. M. AND SLATE, D. M., ed. *Economics in action—readings in current economic issues.* 2nd ed. Belmont, Calif.: Wadsworth, 1962. Pp. xv, 459.

PREDETTI, A. *Letture economiche.* Milan: Ed. L'industria, 1961. Pp. 107.

SCHWARTZ, J. T. *Lectures on the mathematical method in analytical economics.* Math. and its applications, vol. 1. New York: Gordon and Breach, 1961. Pp. xi, 282. \$14.50.

SIEVERS, A. M. *Revolution, evolution, and the economic order.* Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. vii, 173. \$3.95; paper, \$1.95.

"In economic affairs, there has been perhaps only one major revolution in the twentieth century, . . . the transformation from the economy of neutral government to the economy in which government plays a major role. . . .

"This book seeks out what a selected few contemporary economists have had to say about the revolution and about the present and prospective economic state of the Union—Professors J. A. Schumpeter, J. K. Galbraith, A. H. Hansen, and J. M. Clark.

" . . . Thus the heart of the book is a dialogue between four economists . . . It will be my function . . . to underscore the relation of each to the others . . . and, finally, to sum up . . ."

VILLARD, H. H. *Economic performance—an introduction to economics.* New York: Holt, Rinehart and Winston, 1961. Pp. xiii, 655. \$6.50.

**Price and Allocation Theory; Income and Employment Theory;
Related Empirical Studies; History of Economic Thought**

- BARNA, T. Investment and growth policies in British industrial firms. Nat. Inst. of Econ. and Soc. Research, occas. paper 20. New York: Cambridge Univ. Press, 1962. Pp. viii, 71. \$2.50.
- BLAUG, M. Economic theory in retrospect. Homewood, Ill.: Irwin, 1962. Pp. xvi, 633. \$7.95.
- CARAVALE, G. Cicli economici e trend. Milan: A. Giuffrè, 1961. Pp. 257. L. 1.500.
- DIAS CARNEIRO, O. A. Noções da teoria da renda. Recife: Comissão de Desenvolvimento Econ. de Pernambuco, 1961. Pp. 113.
- DIEDERICH, H. Der Kostenpreis bei öffentlichen Aufträgen. Eine wirtschaftswissenschaftliche Analyse. Heidelberg: Quelle & Meyer, 1961. Pp. 235.
- FISHER, F. M. A priori information and time series analysis: essays in economic theory and measurement. Amsterdam: North-Holland, 1962. Pp. 168. Paper, \$5.
"This book discusses various topics in the theory and measurement of economic behavior over time." The topics covered are: rigid lags and the estimation of "long-run" economic reactions; a psychological experiment; the quantitative structure of the United Kingdom wheat market, 1867-1914; the demand for aluminum ingot in the United States, 1925-1940; the survival of the passenger train: the demand for railroad passenger transportation between Boston and New York.
- KRELLE, W. Preistheorie. Zurich: Polygraphischer Verlag; Tübingen: Mohr, 1961. Pp. 732.
- LEBLANC, M. De Thomas More à Chaptal. Paris: Cujas, 1961. Pp. 170. NF 18.
- MALINVAUD, E. Modèles linéaires des économies à secteurs multiples. *Colectânea de Estudos* no. 6. Lisbon: Centro de Estud. de Estat. Econ., 1959. Pp. 96.
- PREDETTI, A. Il modello di R. F. Harrod. Rome: Istituto Nazionale per lo Stud. della Congiuntura, 1961. Pp. 140. L. 1.000.
- . Studio sul comportamento del consumatore—nuovi orientamenti. Milan: Ed. L'industria, 1960. Pp. 227. L. 1.800.
- PREISER, E. Wachstum und Einkommensverteilung. Heidelberg: Carl Winter, Universitätsverlag, 1961. Pp. 45. DM 7.20.
- RANIS, G. Urban consumer expenditure and the consumption function. Monogr. in econ. develop. no. 6. Karachi: Inst. of Develop. Econ., 1961. Var. pp.
- SPEGLER, J. J. AND ALLEN, W. R., ed. Essays in economic thought: Aristotle to Marshall. Chicago: Rand McNally, 1960. Pp. 800. \$8.50.
- THORE, S. Household saving and the price level. Stockholm: Nat. Inst. Econ. Research; Almqvist & Wiksell, distrib., 1961. Pp. 291. SKr. 35; paper, SKr. 30.
- WILES, P. J. D. Price, cost and output. Rev. 2nd ed. Oxford: Basil Blackwell, 1961. Pp. xiv, 313. 35s.
- Contribuições para a teoria de investimento. Seminar held in April, May 1957 under the direction of E. Schneider. Lisbon: Inst. Superior de Ciencias Econ. and Fin., 1958. Pp. 107.
- Variability of private investment in plant and equipment. Pt. 1, Investment and its financing. Pt. 2, Some elements shaping investment decisions. Materials submitted to the Joint Economic Committee, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. viii, 68; vii, 55. 25¢; 20¢.

Economic History; Economic Development; National Economies

- ADHIN, J. H. Development planning in Surinam, in historical perspective (with special reference to the Ten Year Plan). Leiden: Stenfert Kroese, 1961. Pp. xi, 215. f 12.
- AJDARI, A. Asie du Sud-Ouest (Proche et Moyen Orient). Statistiques économiques et sociales. Dévelop. écon. no. 5. Paris: Sté d'édit. d'enseignement supérieur, 1961. Pp. 311.

- ASHER, R. E., HAGEN, E. E., HIRSCHMAN, A. O. AND OTHERS. Development of the emerging countries—an agenda for research. Washington: Brookings Inst., 1962. Pp. xi, 239. \$3.75; paper, \$2.75.
- ASHTON, T. S. An eighteenth-century industrialist—Peter Stubs of Warrington, 1756-1806. New York: Barnes & Noble, 1961. Pp. x, 156. \$4.25. First pub. 1939.
- BARVE, S. G. With malice toward none—a critique of new India's plans and aspirations. New York: Asia Pub. House; Taplinger, distrib., 1962.
- BILLERBECK, K. Reform der Entwicklungshilfe. Auf der Basis bisheriger Erfahrungen. Hamburg: Verlag Weltarchiv, 1961. Pp. 88.
- BOUDEVILLE, J. -R. Les espaces économiques. Paris: Presses Univ. de France, 1961. Pp. 128. NF 2.50.
- CLAPHAM, J. H. The economic development of France and Germany 1815-1914. 4th ed. New York: Cambridge Univ. Press, 1961. Pp. ix, 420. Paper, \$3.75.
- COLLETTE, J. -M. Le taux de croissance du revenu national Soviétique. Cahiers I.S.E.A., no. 119, ser. G., no. 12. Paris: Inst. Sci. Econ. Appliquée, 1961. Pp. 126.
- DENISON, E. F. The sources of economic growth in the United States and the alternatives before us. Suppl. paper. New York: Com. for Econ. Develop., 1962. Pp. 297. Paper, \$4.
- DUCOFF, L. J. Los recursos humanos de Centroamérica, Panamá y México en 1950-1980 y sus relaciones con algunos aspectos del desarrollo económico. México: Naciones Unidas, 1960. Pp. 159. Mex\$25.
- ECKSTEIN, A. WITH YIN, Y. C. AND YIN, H. The national income of Communist China. New York: Free Press of Glencoe, 1961. Pp. 215. \$6.75.
- FANFANI, A. Storia economica. Pt. 1, Antichità-medioevo-età moderna. Turin: UTET, 1961. Pp. xi, 606. L. 5.500.
- FISHEL, W. R., ed. Problems of freedom—South Vietnam since independence. New York: Free Press of Glencoe for Bur. of Soc. and Pol. Research, Michigan State Univ., 1961. Pp. xiv, 233. \$6.95.
- GAINSBROUGH, M. R., ed. American enterprise—the next ten years. From the proceedings of the 44th annual meeting of the Nat. Indus. Conf. Board. New York: Macmillan, 1961. Pp. 511.
- GALLISSOT, R. L'économie de L'Afrique du Nord. Paris: Presses Univ. de France, 1961. Pp. 128.
- GILL, C. Merchants and mariners of the 18th century. New York: St. Martin's Press; London: Edward Arnold, 1961. Pp. 176. \$6.75.
- GOUEA DE BULHOES, O. Función de los precios en el desarrollo. México: Centro de Estud. Mon. Latinoamericanos (CEMLA), 1961. Pp. 91. Mex\$18.
- HALL, P. G. The industries of London since 1861. London: Hutchinson Univ. Lib., 1962. Pp. 192. 12s. 6d.
- HAX, K. Japan—Wirtschaftsmacht des Fernen Ostens: ein Beitrag zur Analyse des wirtschaftlichen Wachstums. Cologne and Opladen: Westdeutscher Verlag, 1961. Pp. 632. DM 56.
- HUGHES, T. J. AND LUARD, D. E. T. The economic development of Communist China 1949-1960. 2nd ed. New York: Oxford Univ. Press, 1961. Pp. vi, 229. \$4.
- KHAN, A. R. Wages and prices in Karachi: a case study. Monogr. in econ. develop. no. 8. Karachi: Inst. of Develop. Econ., 1961. Pp. 34.
- KHAN, N. A. Problems of growth of an underdeveloped economy—India. New York: Asia Pub. House; Taplinger, distrib., 1961. Pp. xi, 441. \$10.
- KUCZYNSKI, J. Die Geschichte der Lage der Arbeiter unter dem Kapitalismus. T. 1, Die Geschichte der Lage der Arbeiter in Deutschland von 1789 bis zur Gegenwart. Vol. 13: Zur politökonomischen Ideologie in Deutschland von 1850 bis zum Ersten Weltkrieg und andere Studien. Berlin: Akademie-Verlag, 1961. Pp. 215. DM 16.

- LAMARTINE, Y. P. Desarrollo regional de México y descentralización industrial. México: Banco de México, S.A. Dept. de Investigaciones Indus., 1961. Pp. 208.
- LETWIN, W., ed. A documentary history of American economic policy since 1789. Chicago: Aldine, 1961. Pp. xxx, 406. \$7.50.
- A collection of reports, laws, veto messages, court decisions, court arguments, and extracts from Congressional Hearings of historical interest; for example, Hamilton's Report on Manufactures, the *Dartmouth College Case*, Jackson's Veto of the Bank Bill, *Munn vs. Illinois*, the Conclusions of the Pujo Committee, etc.
- LI, C. M. The statistical system of Communist China. Berkeley, Calif.: Univ. of California Press, 1962. Pp. viii, 174. \$4.
- MEYER, A. J. WITH VASSILIOU, S. The economy of Cyprus. Cambridge: Harvard Univ. Press, 1962. Pp. xii, 94. \$3.50.
- MILLER, N. The enterprise of a free people: aspects of economic development in New York State during the canal period, 1792-1838. New York: Cornell Univ. Press, for Am. Hist. Assoc., 1962. Pp. xv, 293. \$6.
- NEALE, A. D. The flow of resources from rich to poor. Occas. papers in internat. affairs, no. 2. Cambridge: Center for Internat. Affairs, Harvard Univ., 1961. Pp. 83.
- NETTELS, C. P. The emergence of a national economy, 1775-1815. Vol. 2, The economic history of the United States. New York: Holt, Rinehart and Winston, 1962. Pp. xvi, 424. \$7.50.
- OLIVIER, R. Techniques modernes d'établissement des programmes de développement. Stage de formation des experts de coopération économique. Paris: Ministère de la Coop.-S.E.M.A., 1961. Pp. 144.
- PALMADE, G. P. Capitalisme et capitalistes français au XIX^e siècle. Paris: A. Colin, 1961. Pp. 299. NF 12.
- PERRONX, F. L'Économie du XX^e siècle. Paris: Presses Univ. de France, 1961. Pp. 600. NF 24.
- PORTNOY, L. La realidad argentina en el siglo XX. Vol. 2, Análisis crítico de la economía. México: Fondo de Cultura Econ., 1961. Pp. 208. Mex\$26.
- REUBENS, E. P. Migration and development in the West Indies. Stud. in fed. econ. no. 3. Kingston, Jamaica: Inst. of Soc. and Econ. Research, Univ. College of the West Indies, 1962. Pp. 84.
- ROTH, G. D. Kurze Wirtschaftsgeschichte Mitteleuropas. Von den Zünften zur industriellen Revolution. München: Oldenbourg, 1961. Pp. 272.
- SIEGEL, B. N. Inflación y desarrollo—las experiencias en México. México: Centro de Estud. Mon. Latinoamericanos (CEMLA), 1960. Pp. 200. Mex\$25.
- STRUMILIN, S. G., ed. Ekonomicheskaya zhizn SSSR: Khronika sobytiy i faktov 1917-1959. (Economic life of the USSR: a chronicle of events and facts, 1917-1959.) Moscow: Sovetskaya Entsiklopedia, 1961. Pp. 780. Rbl. 3.00.
- A useful record, in the form of summaries and a subject index, of the main events in the history of the Soviet economy, arranged according to the calendar and documented with references to the primary sources.
- TANG, P. S. H. Communist China today. 2nd ed. Washington: Research Inst. on the Sino-Soviet Bloc, 1961. Pp. 745.
- TEICHERT, P. C. M. La revolución económica e industrialización en América Latina. México: Fondo de Cultura Econ., 1961. Pp. 468. Mex\$44.
- WARD, B. The rich nations and the poor nations. New York: Norton, 1962. Pp. 159. \$3.75. This book is based on lectures given for the Canadian Broadcasting Corporation.
- WRIGHT, H. R. C. East-Indian economic problems of the age of Cornwallis & Raffles. London: Luzac, 1961. Pp. ix, 371. 42s.
- El desarrollo económico del El Salvador. Análisis y Proyecciones. Mexico: Comisión Econ. para América Latina, 1959. Pp. 175.

- El desarrollo económico de Panamá. Análisis y Proyecciones. México: Comisión Econ. para América Latina, 1959. Pp. 203.
- Federal budgeting for research and development. Hearings before the Subcommittee on Reorganization and International Organizations of the Senate Committee on Government Operations, 87th Cong., 1st sess. Pt. 1, The Department of Defense and the National Aeronautics and Space Administration. Agency coordination stud. Washington: Supt. Docs., 1961. Pp. 226.
- Formulating industrial development programmes—with special reference to Asia and the Far East. Report of the second group of experts on programming techniques. Develop. programming technique ser. no. 2. Bangkok: U. N. Econ. Comm. for Asia and the Far East, 1961. Pp. xii, 137. \$1.50.
- The light industry of the Ukraine. Washington: Joint Pub. Research Svce., 1961. Pp. 311.
- Méthodes de prévision du développement économique à long terme—rapport d'un groupe d'experts. *Informations Statistiques*, no. 6. Brussels: Stat. Office of the European Communities, 1960. Pp. 172. Bfr. 250.
- Nuevos aspectos de la política económica y de la administración pública en México. México: Univ. Nacional Autónoma de México, Escuela Nacional de Econ., 1960. Pp. 139. Mex\$25.
- Plan cuatrienal de inversiones públicas nacionales, 1961-1964. Bogotá: Consejo Nacional de Pol. Econ. y. Planeación, 1960. Pp. 370.
- Programa de desarrollo económico del Valle del Magdalena y Norte de Colombia. Bogotá: Informe de una Misión Dir. por Lauchlin Currie, 1960. Pp. 377.
- ¿Qué es el desarrollo económico? Expertos de las Naciones Unidas. Buenos Aires: Ed. Dédalo, 1960. Pp. 156. Mex\$20.
- Techno-economic survey of Tripura. New Delhi: Nat. Council of Applied Econ. Research, 1961. Pp. 163. Rs 15.

Statistical Methods; Econometrics; Social Accounting

- BLYTH, C. The use of economic statistics. Minerva ser. students' handbooks. New York: Praeger, 1961. Pp. 249.
- "This is an elementary introduction to the sources of economic statistics and their uses in answering economic questions." The main feature of the book is the working through of examples: e.g., "The slump in the motor industry, 1956-7," "How much have prices risen since before the war?" "Changes in incomes."
- FREUND, J. E. Mathematical statistics. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xiii, 390. \$7.50.
- FRIEDMANN, B. Deflationierungsmethoden in Rahmen der volkswirtschaftlichen Gesamtrechnung. Berlin: Duncker & Humblot, 1961.
- GRIFFIN, J. I. Statistics—methods and applications. New York: Holt, Rinehart and Winston, 1962. Pp. xxv, 533. \$8.
- HADLEY, G. Linear programming. Reading, Mass.: Addison-Wesley, 1962. Pp. xii, 520. \$9.75.
- LAMPFMAN, R. J. The share of top wealth-holders in national wealth 1922-1956. NBER no. 74, gen. ser. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1962. Pp. xxvii, 286. \$6.50.
- MOUCHEZ, P. Les indices de prix. Étude méthodologique. Paris: Cujas, 1961. Pp. 238. NF 24.
- TUMMINS, M. AND TRENOR, W. R. Forecasting and estimating—a selected annotated bibliography with special emphasis on methodology (supplemented by a section of unannotated entries). Charlottesville: Virginia Council of Highway Investigation and Research in coop. with the U. S. Bur. Pub. Roads, 1961. Pp. 96.
- WILKS, S. S. Mathematical statistics. New York: Wiley, 1962. Pp. xvi, 644. \$15.
- YAMANAKA, T. A study of the Honolulu consumer price index. Honolulu: Econ. Research Center, Univ. of Hawaii, 1960. Pp. iv, 27.

- Polish statistical yearbook, 1960. Washington: Joint Pub. Research Svce., 1961. Pp. 1502.
- Seasonal adjustment on electronic computers. Report and proceedings of an international conference held in November 1960, sponsored by the Organization for European Economic Co-operation in collaboration with the Conference of European Statisticians. Paris: Org. for Econ. Co-op. and Develop., 1961. Pp. 403. \$9.50.

Economic Systems; Planning and Reform; Cooperation

- BLETON, P. *Le capitalisme en pratique*. Paris: Ouvrières, 1961. Pp. 304. NF 12.90.
- COLE, M. *The story of Fabian Socialism*. Stanford: Stanford Univ. Press, 1961. Pp. xv, 366. \$6.50.
- COX, O. C. *Capitalism and American leadership*. New York: Philos. Lib., 1962. Pp. xx, 328. \$6.
- MALYSHEV, I. S. *Obshchestvenny uchet truda i tsena pri socializme*. (Social accounting of work and prices under socialism.) Moscow: Pub. House for Soc. Econ. Lit., 1960. Pp. 364.
- SMITH, H. *The economics of socialism reconsidered*. New York: Oxford Univ. Press, 1962. Pp. x, 225. \$4.80.
- SOBOL, V. A. *Ocherki po Voprosam Balansa Narodnogo Khosiaistva*. (Studies in the problems of the balance of the national economy.) Moscow: Pub. House for Stat. Lit., 1960. Pp. 226.
- Seminario de las Naciones Unidas sobre cuentas nacionales para América Latina, Río de Janeiro 11-26 de junio de 1959. Comisión Económica para América Latina, Dirección de operaciones de Asistencia Técnica, Instituto Interamericano de Estadística y Gobierno de Brasil. New York: U.N., 1960. Pp. 608.
- Vergleich zwischen den Wirtschaftssystemen in der Welt. Mitgliederversammlung der Arbeitsgemeinschaft Deutscher Wirtschaftswissenschaftlicher Forschungsinstitute in Bad Godesberg, June 2 and 3, 1961. Berlin: Duncker & Humblot, 1961. Pp. 138.

Business Fluctuations

- MÉRAUD, J. *Quelques méthodes de prévision à court terme—analyses des tendances récentes, indices précurseurs et tests conjoncturels*. Cahiers I.S.E.A., no. 116, ser. AK, no. 1. Paris: Inst. Sci. Econ. Appliquée, 1961. Pp. 107.
- Annual report of the Joint Economic Committee on the January 1962 Economic Report of the President with minority and other views. 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. vi, 162. 45¢.
- Business outlook 1962—a discussion by the Conference Board Economic Forum and guests held at the Park Lane Hotel, New York City, November 22, 1961. Stud. bus. econ. no. 76. New York: Nat. Indus. Conf. Board, 1961. Pp. 135. \$2.50; \$12.50, non-associates.
- Fiscal and monetary policy for high employment. CED Statement on nat. policy. New York: Com. for Econ. Develop., 1962. Pp. 59. \$1.
- Inventory fluctuations and economic stabilization. Pt. 1, Postwar fluctuations in business inventories. Pt. 2, Causative factors in movements of business inventories. Materials prepared for the Joint Economic Committee, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. xvii, 180; viii, 194. 50¢; 55¢.
- January 1962 economic report of the President. Hearings before the Joint Economic Committee, 87th Cong., 2nd sess., Jan. 25-31, Feb. 2-8, 1962. Washington: Supt. Docs., 1962. Pp. viii, 845. \$2.25.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

- ADLER, J. H. *Recursos financieros y reales para el desarrollo*. Mexico: Centro de Estud. Mon. Latinoamericanos (CEMLA), 1961. Pp. 148. Mex\$20.
- BLOOMFIELD, A. I. *Central banking arrangements for the West Indian Federation*. Stud. in

- fed. econ. no. 2. Jamaica: Inst. Soc. and Econ. Research, Univ. College of the West Indies, 1961. Pp. 36.
- BOUVIER, J. *Le crédit Lyonnais de 1863 à 1882—les années de formation d'une banque de dépôts*. 2 vols. Paris: S.E.V.P.E.N., 1961. Pp. 500; 937.
- BROVEDANI, B. *Bases analíticas de la política monetaria*. México: Centro de Estud. Mon. Latinoamericanos (CEMLA), 1961. Pp. 143. Mex\$17.
- BROWALDE, T. *Die Renaissance der Kreditpolitik—der Bankdirektor als wirtschaftspolitischer Faktor*. Kieler stud., n.s. no. 19. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1962. Pp. 22.
- CONFALONIERI, A. *Le due banche popolari mantovane dalle origini alla fusione (1866-1932)*. Mantova: Banca Agric. Mantovana, 1961. Pp. 221.
- FISCHER, G. C. *Bank holding companies*. New York and London: Columbia Univ. Press, 1961. Pp. xxi, 215. \$5.50.
- HUDECEK, C. *Geldprobleme der Europäischen Wirtschaft-Währungs- und Kreditfragen der Integration*. Düsseldorf and Vienna: Econ-Verlag, 1961. Pp. 272.
- JEANNENEY, S., GUILLAUMONT, P. AND BYÉ, M. *Monnaie et croissance (12)*. Cahiers I.S.E.A., no. 117, ser. A., no. 12. Paris: Inst. Sci. Écon. Appliquée, 1961. Pp. ii, 107.
- JONES, O. AND GREBLER, L. *The secondary mortgage market—its purpose, performance, and potential*. Los Angeles: Real Estate Research Program, Grad. School of Bus. Admin., Univ. of California, 1961. Pp. xv, 281. \$6.50.
- LINDBECK, A. *The "new" theory of credit control in the United States—an interpretation and elaboration*. 2nd ed. Stockholm econ. stud. pamph. ser. no. 1. Stockholm: Almqvist & Wiksell, 1962. Pp. 57. SKr. 4.
- LUTHY, H. *La banque protestante en France de la révocation de l'édit de Nantes à la Révolution*. Vol. 1, Dispersion et regroupement (1685-1730). Vol. 2, De la banque aux finances. Paris: S.E.V.P.E.N., 1959; 1961. Pp. x, 460. NF 70.
- PIPPING, H. E. *Från pappersrubel till guldmärke—Finlands Bank 1811-1877*. Helsinki: Finlands Bank, 1961. Pp. 560.
- POTUT, G. *La Banque de France du franc de Germinal au Crédit contrôlé*. Paris: Plon, 1961. Pp. 233.
- REED, E. W. *Consumer financing costs and practices in Hawaii*. Honolulu: Econ. Research Center, Univ. of Hawaii, 1960. Pp. v, 43.
- ROBINSON, R. I. *The management of bank funds*. 2nd ed. New York: McGraw-Hill, 1962. Pp. viii, 445. \$7.95.
- SELDEN, R. T. *The postwar rise in the velocity of money—a sectoral analysis*. Occas. paper no. 78. New York: Nat. Bur. Econ. Research, 1962. Pp. 67. \$1.
- STERRENBURG, J. N. *L'intégration monétaire*. (Monetary aspects of economic integration.) Leiden: Stenfert Kroese, 1961. Pp. 169. f 14.
- Investigation and study of the Federal Home Loan Bank Board. Hearings before a Subcommittee of the House Committee on Government Operations, 87th Cong., 1st sess. Pt. 1A, Alice, Texas, April 14-25, 1961. Washington: Supt. Docs., 1962. Pp. 461.
- Supplement to banking & monetary statistics. Section 10, Member bank reserves and related items. Washington: Board of Governors, Federal Reserve System, 1962. Pp. 64.

Public Finance; Fiscal Policy

- COSCIANI, C. *Instituzioni di scienza delle finanze*. 3rd ed. Turin: UTET, 1961. Pp. xvi, 832. L. 7.000.
- HOLLAND, D. M. *Dividends under the income tax*. NBER fiscal stud. no. 7. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1962. Pp. xvii, 189. \$4.50.
- JACKSON, F. H. *Tax burden and the Hawaiian tax system*. Honolulu: Econ. Research Center, Univ. of Hawaii, 1960. Pp. vii, 47.

- KENDRICK, M. S. AND JACKSON, F. H. Economic impact of tax reduction. Honolulu: Econ. Research Center, Univ. of Hawaii, 1960. Pp. 34.
- QUINDRY, K. E. City revenue practices in Kentucky and selected other states. Lexington: Bur. of Bus. Research, Univ. of Kentucky, 1961. Pp. viii, 100. Free.
- REED, E. W. Resort financing in Hawaii. Honolulu: Econ. Research Center, Univ. of Hawaii, 1960. Pp. v, 73.
- SACKS, S. AND OTHERS. Financing government in a metropolitan area—the Cleveland experience. New York: Free Press of Glencoe, 1961. Pp. 387.
- SAHOTA, G. S. Indian tax structure and economic development. New York: Asia Pub. House; Taplinger, distrib., 1961. Pp. xviii, 88. \$4.
- SARFAZ, N. Problems of budgetary reform in Pakistan. Monogr. in econ. develop. no. 7. Karachi: Inst. of Develop. Econ., 1961. Pp. 60.
- STOESSINGER, J. G. Financing the United Nations. *International Conciliation*, no. 535, Nov. 1961. New York: Carnegie Endowment for Internat. Peace; Taplinger, distrib., 1961. Pp. 72. 35¢.
- The federal budget as an economic document. Prepared for the Subcommittee on Economic Statistics, Joint Economic Committee, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. xi, 189. 50¢.
- State income taxation of mercantile and manufacturing corporations. Hearings before the Special Subcommittee on State Taxation of Interstate Commerce of the House Committee on the Judiciary, 87th Cong., 1st sess., Dec. 4-13, 1961. Washington: Supt. Docs., 1962. Pp. 651.

International Economics

- DÜRR, E. Konjunkturpolitik bei Konvertibilität. Cologne: Inst. f. Wirtschaftspolitik an der Univ. zu Köln, 1961. Pp. 87.
- GEIGER, T. The premium gold controversy in the International Monetary Fund. University: Univ. of Alabama Press, 1961. Pp. 59.
- HEXNER, E. P. Das Verfassungs- und Rechtssystem des Internationalen Währungsfonds. Frankfurt am Main: Klostermann, 1960. Pp. 115.
- HOFFMANN, E. COMECON—Der gemeinsame Markt in Osteuropa. Opladen: C. W. Leske, 1961. Pp. 174. DM 39.
- KANNAPPAN, S. AND BURGESS, E. W. Aluminum Limited in India. NPA ser. on bus. performance abroad, case stud. no. 11. Washington: Nat. Planning Assoc., 1961. Pp. xiii, 74. \$1.
- LUCRON, C. -P. Croissance économique et investissement international. Paris: Presses Univ. de France, 1961. Pp. 292. NF 16.
- LYONS, G. M. Military policy and economic aid—the Korean case, 1950-1953. Columbus: Ohio State Univ. Press, 1961. Pp. 298.
- PHILIPS, L. De l'intégration des marchés. Louvain and Paris: Nauwelaerts, 1962. Pp. 313. 320 Bfr.
- PIQUET, H. S. Foreign trade and foreign policy—a statement by the NPA International Committee. Planning pamph. 116. Washington: Nat. Planning Assoc., 1962. Pp. xii, 49. \$1.50.
- SCHNEIDER, E., ed. Die Weltwirtschaft. Halbjahresschrift des Instituts für Weltwirtschaft an der Universität Kiel. Vol. 2. With statistical supplement. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1961. Pp. 101; 84. DM 16.
- VANEK, J. International trade—theory and economic policy. Homewood, Ill.: Irwin, 1962. Pp. xiii, 426. \$7.50.
- ZIEGLER, G. Der Osthandel Griechenlands in den Jahren 1956-1959. Berlin: Osteuropa-Institut, Freien Univ. Berlin, 1961. Pp. 28. DM 3.
- The business outlook for 1962 in 26 world markets. New York: Bus. Internat., 1962. Pp. 35. \$26.

- Commodity trade statistics according to the standard international trade classification. Stat. papers ser. D, vol. 10 (4), pt. 2, Exports—January–December 1960. New York: Stat. Office, U.N. Dept. of Econ. and Social Affairs, 1961. Pp. xv, 843. \$1.25.
- Economic policies and programs in South America. Subcommittee on Inter-American Economic Relationships of the Joint Economic Committee, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. vi, 123. 35¢.
- Étude comparative des Budgets de l'État des pays du Benelux 1959–1961. In Dutch and French. Brussels: L'Union Écon. Benelux, 1961. Pp. 59. F 100.
- The European Economic Community and the United States. Joint Economic Committee print. Washington: Supt. Docs., 1961. Pp. 60.
- Export of strategic materials to the U.S.S.R. and other Soviet bloc countries. Hearing before the Subcommittee to Investigate the Administration of the Internal Security Act and Other Internal Security Laws of the Senate Committee on the Judiciary, 87th Cong., 1st sess. Pt. 1, Oct. 23, 1961. Washington: Supt. Docs., 1961. Pp. 131.
- Foreign economic policy. Hearings before the Subcommittee on Foreign Economic Policy of the Joint Economic Committee, Dec. 4–14, 1961. Washington: Supt. Docs., 1962. Pp. v, 524. \$1.50.
- Foreign economic policy for the 1960's. Report of the Joint Economic Committee, 87th Cong., 2nd sess., with minority and other views. Washington: Supt. Docs., 1962. Pp. vii, 50. 20¢.
- Impact of imports and exports on employment. Hearings before the Subcommittee on the Impact of Imports and Exports on American Employment of the House Committee on Education and Labor, 87th Cong., 1st sess. Pt. 1, coal and residual fuel oil. Pt. 3, glass, pottery, and toys. Pt. 4, textiles. Pt. 5, steel and aluminum. Pt. 6, apparel and apparel-related products. Pt. 7, consumer goods and services; metal products, building materials, lead, zinc. Wheeling, West Virginia and Washington, June 19 and 20; July 12; July 19–21; Aug. 14–21; Aug. 21–23; Aug. 28–31, 1961. Washington: Supt. Docs., 1962. Pp. 215; 162; 292; 330; 351; 465.
- India—business problems & opportunities. New York: Bus. Internat., 1961. Pp. 64. \$45.
- Investigation and study of the administration, operation, and enforcement of the Export Control act of 1949, and related acts. Hearings before the House Select Committee on Export Control, 87th Cong., 1st sess., Oct. 25–30 and Dec. 5–8, 1961. Washington: Supt. Docs., 1962. Pp. 584.
- Recent changes in Europe's trade. *Econ. Bull. for Europe*, vol. 13 (1). Geneva: U.N. Econ. Comm. for Europe, 1961. Pp. 55. 75¢.
- Staff memorandum on international lending agencies. House Committee on Foreign Affairs, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 192.
- Tariff classification study—alphabetical index of commodities provided for in the proposed revised tariff schedules of the United States; report to the President and to the chairmen of the House Committee on Ways and Means and the Senate Committee on Finance. Tariff Comm. Washington: Supt. Docs., 1961. Pp. 127.
- U.S. commodity and imports as related to output, 1958. Office of the Chief Economic Statistician. Washington: Bur. of the Census, 1962. Pp. 50.

Business Finance; Investment and Security Markets; Insurance

- HUNTING, R. B. AND NEUWIRTH, G. S. Who sues in New York City? A study of automobile accident claims. New York: Columbia Univ. Press, 1962. Pp. xii, 186. \$6.50.
- HUSBAND, W. H. AND DOCKERAY, J. C. Modern corporation finance. 5th ed. Homewood, Ill.: Irwin, 1962. Pp. xiii, 765. \$8.25.
- KENNEDY, J. C. Corporate trust administration. New York: New York Univ. Press, 1961. Pp. vi, 259. \$8.50.
- PHELPS, C. W. Accounts receivable financing as a method of securing business loans. 2nd ed. Stud. in commercial fin., no. 2. Baltimore: Educational Div., Commercial Credit Co., 1961. Pp. 84.

WESTON, J. F. *Managerial finance*. New York: Holt, Rinehart and Winston, 1962. Pp. xii, 660. \$8.50.

Business Organization; Managerial Economics; Marketing; Accounting

AITKEN, T., JR. *A foreign policy for American business*. New York: Harper, 1962. Pp. 159. \$4.

ALFANDARY-ALEXANDER, M. *An inquiry into some models of inventory systems*. Pittsburgh: Univ. of Pittsburgh Press, 1962. Pp. vii, 108. \$7; paper, \$4.

ARGYRIS, C., DUBIN, R. AND OTHERS. *Social science approaches to business behavior*. Homewood, Ill.: Dorsey Press and Irwin, 1962. Pp. vii, 183. \$5.

BERGFELD, A. J., EARLEY, J. S. AND KNOBLOCH, W. R. *Pricing for profit and growth*. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. ix, 128. \$12.50.

BESTE, T. *Die Kurzfristige Erfolgsrechnung*. 2nd ed. Cologne and Opladen: Westdeutscher Verlag, 1962. Pp. xi, 556. DM 49.50.

BRIGHT, J. R., ed. *Technological planning on the corporate level*. Proceedings of a conference sponsored by the Associates of the Harvard Business School, Sept. 1961. Boston: Grad. School of Bus. Admin., Harvard Univ., 1962. Pp. vii, 253. Paper, \$3.50.

CHAMBERLAIN, N. W. *The firm: micro-economic planning and action*. New York: McGraw-Hill, 1962. Pp. ix, 428. \$7.95.

CHERINGTON, P. W. AND GILLEN, R. L. *The business representative in Washington—a report on the round-table discussions of nineteen Washington representatives on their job as they see it*. Washington: Brookings Inst., 1962. Pp. x, 134. Paper, \$2.

DEWEY, A. G. *Peasant marketing in Java*. New York: Free Press of Glencoe, 1962. Pp. xxi, 238. \$6.

FLORENCE, P. S. *Post-war investment, location and size of plant*. Nat. Inst. of Econ. and Soc. Research occas. paper 19. New York: Cambridge Univ. Press, 1962. Pp. viii, 51. \$2.50.

GAINSBURGH, M. R., ed. *American enterprise: the next ten years*. From the proceedings of the forty-fourth annual meeting of the National Industrial Conference Board. New York: Macmillan, 1961. Pp. lix, 511. \$5.95.

The volume contains about fifty short papers on: (1) America and the World (the international outlook; international commodities; growth rates and potentials in Europe, Latin America, and Canada); (2) Our Domestic Markets (capital goods markets; consumer markets; the long-term business outlook); (3) Technology and Its Impact (the technological horizon; productivity and wages; absorbing technological change); (4) Financing National Growth (consumer finance; the financial outlook; financing business in the 1960's).

HAIMANN, T. *Professional management—theory and practice*. Boston: Houghton Mifflin, 1962. Pp. x, 556. \$6.50.

HALL, M., KNAPP, J. AND WINSTEN, C. *Distribution in Great Britain and North America—a study in structure and productivity*. New York: Oxford Univ. Press, 1961. Pp. xiii, 231. \$10.10.

Part I "provides a statistical summary of the structure and productivity of distribution in the United States, Great Britain and Canada, and also of the variations in the numbers and size of distributive outlets, and in productivity." Part II is concerned with the conceptual problems—in particular, the concepts of distributive output, efficiency and economies of scale. Part III "contains the main part of the statistical analysis. It is, basically, an attempt to explain how the size of the market and other environmental factors affect the scale of retail enterprise and the salesproductivity of labour. . . ." (From the introduction.)

HANSSMANN, F. *Operations research in production and inventory control*. New York: Wiley, 1962. Pp. xii, 254. \$8.95.

HIRSCH, L. V. *Marketing in an underdeveloped economy: the North Indian sugar industry*. Englewood Cliffs, N.J.: Prentice-Hall, 1961. Pp. xix, 392. \$4.50.

- JEHRING, J. J. AND HELBURN, I. B. A comprehensive bibliography on total group productivity motivation in business. Madison: Center for Productivity Motivation, School of Commerce, Univ. of Wisconsin, 1961. Pp. 75. \$1.
- MAIER, N. R. F. AND HAYES, J. J. Creative management. New York: Wiley, 1962. Pp. vii, 227. \$5.95.
- MELLEROWICZ, K. Planung und Plankostenrechnung. Vol. 1, Betriebliche Planung. Freiburg: Rudolf Haufe, 1961.
- MOES, J. E. Local subsidies for industry. Chapel Hill: Univ. of North Carolina Press, 1962. Pp. viii, 252. \$6.
- MUELLER, E., WILKEN, A. AND WOOD, M. Location decisions and industrial mobility in Michigan 1961. Survey research ser. no. 22. Ann Arbor: Inst. for Soc. Research, Univ. of Michigan, 1961.
- SHULTZ, W. J. AND REINHARDT, H. Credit and collection management. 3rd ed. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xviii, 637. \$11.
- TOUSLEY, R. D., CLARK, E. AND CLARK, F. E. Principles of marketing. New York: Macmillan, 1962. Pp. xx, 716. \$8.50.
Based on Clark and Clark, *Principles of marketing*, 3rd ed. (1942).
- WATERS, L. L., BROEHL, W. G., SPENCER, C. H. AND POWELL, R. M. Administering the going concern. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xvi, 702. \$11.65.
- The benefits and problems incident to automation and other technological advances—report to the President. Washington: President's Advisory Com. on Lab.-Manag. Policy, 1962. Pp. 25.

Industrial Organization; Government and Business; Industry Studies

- BARON, S. Brewed in America—a history of beer and ale in the United States. Boston: Little, Brown, 1962. Pp. xii, 424. \$7.50.
- BENOIST, M. AND PETTIER, F. Les transports maritimes. Paris: A. Colin, 1961. Pp. 222.
- BERENDT, G. Die Entwicklung der Marktstruktur im internationalen Luftverkehr. Berlin: Duncker & Humblot, 1961. Pp. 265.
- FISCHER, G. C. Bank holding companies. New York: Columbia Univ. Press, 1961. Pp. 215.
- FISHER, F. M. AND KAYSEN, C. A study in econometrics: the demand for electricity in the United States. Amsterdam: North-Holland Pub. Co., 1962. Pp. xvi, 186. Paper, \$5.
- LEEMAN, W. A. The price of Middle East oil: an essay in political economy. Ithaca: Cornell Univ. Press, 1962. Pp. xvi, 274. \$5.
- LÓPEZ MALO, E. Ensayo sobre localización de la industria en México. Mexico: Univ. Nacional Autónoma de México, 1960. Pp. 327. Mex\$30.
- MEANS, G. C. Pricing power & the public interest—a study based on steel. New York: Harper, 1962. Pp. xxi, 359. \$7.50.
- MUND, V. A. AND HUNG, F. C. Interlocking relationships in Hawaii and public regulation of ocean transportation. Honolulu: Econ. Research Center, Univ. of Hawaii, 1961. Pp. vii, 59.
- NAHAI, L. India's iron and steel industry. Bur. of Mines info. circular, 8055. Washington: Dept. of the Interior, Bur. of Mines, 1961. Pp. 40.
- PILLSBURY, W. A. The economic and social effects of highway improvement: an annotated bibliography. Charlottesville: Virginia Council of Highway Investigation and Research (in coop. with U.S. Bur. of Pub. Roads), 1961. Pp. vii, 107.
- RAMANADHAM, V. V. The structure of public enterprise in India. New York: Asia Pub. House; Taplinger, distrib., 1961. Pp. x, 267.
- SINGH, B. The economics of small-scale industries—a case study of small-scale industrial establishments of Moradabad. New York: Asia Pub. House; Taplinger, distrib., 1961. Pp. xii, 144. \$6.50.

SPRAOS, J. The decline of the cinema: an economist's report. London: Allen & Unwin, 1962. Pp. 168.

The author's object is "to discover, so far as possible, the relationships underlying the facts, the patterns behind the events, the economic logic underneath the behaviour of an industry in decline, and, in the light of these findings, to discuss the economic future of the cinema and appraise the policy issues raised."

Among the underlying facts examined statistically are the influence of television, cinema closures, and the contraction of film output. The behavior of prices and costs is also examined. Alternative policies are considered.

TAMAMES, R. La lucha contra los monopolios. Coleccion de Ciencias Soc., no. 17. Madrid: Ed. Tecnos, S. A., 1961. Pp. 272.

TISMER, J. F. Der Fahrzeugbau im Ostblock: Schienenfahrzeuge, Strassenfahrzeuge, Traktoren und Wasserfahrzeuge. No. 49. Berlin: Osteuropa-Institut, Freien Univ. Berlin, 1961. Pp. 78.

TUMMINS, M. AND TRENOR, W. R. Forecasting and estimating—a selected annotated bibliography with special emphasis on methodology (supplemented by a section of unannotated entries). Charlottesville: Virginia Council of Highway Investigation and Research in coop. with U.S. Bur. of Pub. Roads, 1961. Pp. ix, 96.

VAN CISE, J. G. The federal antitrust laws. Washington: Am. Enterprise Assoc., 1962. Pp. vi, 86. \$1.

VILLAFUERTE, C. Ferrocarriles. Mexico: Fondo de Cultura Econ., 1960. Pp. 284. Mex\$34.

WILDAVSKY, A. Dixon-Yates: a study in power politics. New Haven: Yale Univ. Press, 1962. Pp. xx, 351. \$6.75.

Cartel and monopoly in modern law. Reports on supranational and national European and American Law, presented to the International Conference on Restraints of Competition at Frankfurt am Main, June 1960. Ed. by Inst. f. ausländisches und internat. Wirtschaftsrecht an der Johann-Wolfgang-Goethe-Univ., Frankfurt am Main in coop. with Inst. for Internat. and Foreign Trade Law of the Georgetown Univ. Law Center, Washington, D.C. 2 vols. Karlsruhe: C. F. Muller, 1961. Pp. xxx, 412; x, 604.

The competitive challenge to steel. New York: Am. Iron and Steel Inst., 1961. Pp. vi, 89.

Functional discounts. Hearing before the Antitrust Subcommittee of the House Committee on the Judiciary, 87th Cong., 1st sess., Aug. 30, 1961. Washington: Supt. Docs., 1962. Pp. 68.

Government patent policy. Hearings before the Subcommittee on Patents, Trademarks and Copyrights of the Senate Committee on the Judiciary, 87th Cong., 1st sess. Pt. 1, April 18-21, 1961. Washington: Supt. Docs., 1961. Pp. 319.

Maritime transport in the People's democracies—USSR. Washington: Joint Pub. Research Svce., 1961. Pp. 147.

Packaging and labeling practices. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 87th Cong., 1st sess. Pt. 2, Oct. 25-27, Dec. 14 and 15, 1961. Washington: Supt. Docs., 1962. Pp. 399.

Problems of the economics and organization of production in Moscow industry. Washington: Joint Pub. Research Svce., 1962. Pp. 430.

Small business administration—1961. Report on annual review of the operations of the Small Business Administration together with individual views. Senate Committee on Small Business, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 40.

Transport statistics in the United States for the year ended December 31, 1960. Pt. 1, railroads, their lessors, and proprietary companies. Bur. Transport Econ. and Stat., Interstate Commerce Comm. Washington: Supt. Docs., 1961. Pp. vi, 570. \$4.25.

U.S. transportation: resources, performance and problems. A collection of papers from the Conference on Transportation Research, Woods Hole, Mass., 1960. Washington: Nat. Research Council, 1961. Pp. 319.

Land Economics; Agricultural Economics; Economic Geography; Housing

BIRD, A. R. Surplus—the riddle of American agriculture. New York: Springer, 1962. Pp. 128. \$3.75.

Written primarily for the non-economist. The author addresses himself to the question: "How can we reduce the food surplus, increase farmers' incomes and still cut farm program costs?" His criticisms of the present program are cogent. His own program involves the use of marketing quotas, land retirement, measures to encourage farm families to retrain or retire, and continued research.

BREIMYER, H. F. Demand and prices for meat—factors influencing their historical development. Dept. of Agric., Econ. Research Svce., tech. bull. no. 1253. Washington: Supt. Docs., 1961. Pp. 108. 35¢.

BRITNELL, G. E. AND FOWKE, V. C. Canadian agriculture in war and peace, 1935-50. Stanford: Stanford Univ. Press, 1962. Pp. xvi, 502. \$8.75.

BURNS, L. S. Investment time scheduling in urban reconstruction: a quantitative study of the reconstruction of Rotterdam. Rotterdam: Netherlands Econ. Inst., 1961. Pp. 151. \$5.

CHISHOLM, N. Rural settlement and land use: an essay in location. London: Hutchinson Univ. Lib., 1962. Pp. 207. 12s. 6d.

CHOMBART DE LAUWE, J. Les paysans soviétiques. Paris: Ed. du Seuil, 1961. Pp. 432. NF 18.

CHRISTENSON, C. L. Economic redevelopment in bituminous coal—the special case of technological advance in United States coal mines, 1930-1960. Cambridge: Harvard Univ. Press, 1962. Pp. xxi, 312. \$7.50.

DIAZ, R. C., VON OPPENFELD, H. AND VON OPPENFELD, J. Case studies of farm families Laguna Province, Philippines. Laguna: Dept. of Agric. Econ., College of Agric., Univ. of the Philippines, 1960. Pp. iv, 92.

The study presents detailed information on the day-to-day activities and conditions of individual farm families.

DURÁN, M. A. AND RODRÍGUEZ, A. J. Cuestiones agrarias de México. Mexico: Fondo de Cultura Econ., 1960. Pp. 230. Mex\$6.

FERNÁNDEZ Y FERNÁNDEZ, R. AND ACOSTA, R. Política agrícola. Mexico: Fondo de Cultura Econ., 1961. Pp. 269. Mex\$24.

FLORES, E. Tratado de economía agrícola. Mexico: Fondo de Cultura Econ., 1961. Pp. 442. Mex\$40.

GARDENT, P. Le Charbon. Paris: Dunod, 1961. Pp. 202. NF 9.

GIBBS, J. P., ed. Urban research methods. Princeton: Van Nostrand, 1961. Pp. xxii, 625. \$12.

HART, H. C. Administrative aspects of river valley development. New York: Asia Pub. House for Indian Inst. of Public Admin., New Delhi; Taplinger, distrib., 1961. Pp. vi, 112. \$2.95.

JOHNSON, G. L., HALTER, A. N., JENSEN, H. R. AND THOMAS, D. W., ed. A study of managerial processes of midwestern farmers. Ames: Iowa State Univ. Press, 1961. Pp. xii, 221. \$4.95.

L'EPLATTENIER, M. Die Träger der internationalen Zusammenarbeit auf dem Gebiete der Landwirtschaft. Winterthur: P. G. Keller, 1961. Pp. xiii, 134.

MAASS, A., HUFSCHMIDT, M. M. AND OTHERS. Design of water-resource systems—new techniques for relating economic objectives, engineering analysis, and governmental planning. Cambridge: Harvard Univ. Press, 1962. Pp. xviii, 620. \$12.50.

MANDELKER, D. R. Green belts and urban growth—English town and country planning in action. Madison: Univ. of Wisconsin Press, 1962. Pp. xv, 176. \$5.

MILHAU, J. AND MONTAGNE, R. L'agriculture aujourd'hui et demain. Paris: Presses Univ. de France, 1961. Pp. iv, 380. NF 20.

- PROTHERO, R. E. (Lord Ernle). *English farming—past and present*. 6th ed. Chicago: Quadrangle Books, 1961. Pp. cxlv, 559. \$10.
- THOMAN, R. S. *The geography of economic activity—an introductory world survey*. New York: McGraw-Hill, 1962. Pp. 602. \$8.95.
- TULLOCK, G. *The fisheries . . . some radical proposals*. Essays in econ. no. 6. Columbia: Bur. of Bus. and Econ. Research, School of Bus. Admin., Univ. of South Carolina, 1962. Pp. vi, 29.
- TURNER, R., ed. *India's urban future*. Selected studies from an international conference sponsored by Kingsley Davis, Richard L. Park, Catherine Bauer Wurster. Berkeley: Univ. of Calif. Press, 1962. Pp. xv, 470. \$7.
- VINCENT, W. H., ed. *Economics and management in agriculture*. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xvii, 452. \$7.50.
- "This book is intended as a comprehensive college undergraduate text in agricultural economics." There are twelve authors. The successive parts are devoted to: economic analysis and management in agriculture; production and consumption decisions in the firm and household; principles of price determination; institutions affecting agriculture; and political-economic problems of agriculture.
- WENGERT, N. *The administration of natural resources—the American experience*. New York: Asia Pub. House; Taplinger, distrib., 1961. Pp. viii, 71. \$2.25.
- YEVSEYENKO, P. M. *Economics and organization of socialist agricultural production—USSR*. Washington: Joint Pub. Research Svce., 1961. Pp. 159.
- ZIEBER, P. *Die sowjetische Erdölwirtschaft. Analyse eines sowjetischen Industriezweiges*. Hamburg: Cram, de Gruyter, 1962. Pp. 272.
- Agricultural economics in India—a bibliography*. 2nd ed. New Delhi: Directorate of Econ. & Stat., Ministry of Food & Agric., 1961. Pp. iii, 342.
- Annual report and statement of accounts. Accompanying survey—Energy and hydrocarbons in 1960*. Rome: Ente Nazionale Idrocarburi, 1961. Pp. 121; 221.
- Labor mobility and population in agriculture*. Ames: Iowa State Univ. Press for Iowa State Univ. Center for Agric. and Econ. Adjustment, 1961. Pp. viii, 231. \$4.95.
- Mexican farm labor program*. Hearing before the Subcommittee on Equipment, Supplies, and Manpower of the House Committee on Agriculture, 87th Cong., 2nd sess., Jan. 19, 1962. Washington: Supt. Docs., 1962. Pp. 46.
- La politique agricole dans la Communauté Économique Européenne*. Pub. no. 35. Brussels: European League for Econ. Co-op., 1962. Pp. 32.
- Resources for the Future—annual report for the year ending September 30, 1961*. Washington: Resources for the Future, 1961. Pp. 111.
- Sugar statistics and related data, compiled in the U.S. Sugar acts—supplies, distribution, quota operations, prices and international data through 1960*. Vol. 1. Dept. of Agric., stat. bull. no. 293. Washington: Supt. Docs., 1961. Pp. 221.
- Technological change and productivity in the bituminous coal industry 1920-60*. Dept. of Lab. bull. no. 1305. Washington: Supt. Docs., 1961. Pp. 136.
- Voprosy novogo poriyadka planirovaniya selskogo khoziaistva*. (Questions of new methods of planning the agricultural economy.) Kuybyshev, 1961. Pp. 420.

Labor Economics

- ARONSON, R. L. AND OTHERS. *Essays on industrial relations research—problems and prospects*. A series of lectures designed to stimulate research in industrial relations. Ann Arbor: Inst. of Lab. and Indus. Rel., Univ. of Michigan, 1961. Pp. 142.
- BARKIN, S. *The decline of the labor movement and what can be done about it—a report to the Center for the Study of Democratic Institutions*. Santa Barbara: Center for the Stud. of Democratic Inst., 1961. Pp. 75.
- CARPENTER, W. H. AND HANDLER, E. *Small business and pattern bargaining*. Babson Park, Mass.: Babson Inst. Press for U.S. Small Bus. Admin., 1961. Pp. xi, 243.
- COURT, J. M. *The problems of union power*. Vol. 1, ser. 1. Washington: Lab. Policy Assoc., 1961. Pp. 136. \$3.50.

- FRIEDMANN, G. The anatomy of work—labor, leisure and the implications of automation. Transl. by W. Rawson. New York: Free Press of Glencoe, 1961. Pp. 203. \$5.
- HARDIN, E., EDDY, W. B. AND DEUTSCH, S. E. Economic and social implications of automation—an annotated bibliography. Vol. 2, Literature 1957-1960. East Lansing: Labor and Indus. Rel. Center, Michigan State Univ., 1961. Pp. 78. \$1.50.
- KORNHAUSER, W., WITH HAGSTROM, W. O. Scientists in industry—conflict and accommodation. Berkeley, Calif.: Univ. of California Press, 1962. Pp. x, 230. \$6.
- LESTER, R. A. The economics of unemployment compensation. Princeton: Indus. Rel. Sec., Princeton Univ., 1962. Pp. x, 137. \$3.75; paper, \$3.
- MALISOFF, H. The insurance character of unemployment insurance. Kalamazoo: W. E. Upjohn Inst. for Employment Research, 1961. Pp. 44.
- MOHR, F. W. Industry wage survey: textile dyeing and finishing, April-May 1961. BLS bull. no. 1311. Washington: Bur. Lab. Stat., 1961. Pp. 44.
- PURCELL, T. V. Blue collar man—patterns of dual allegiance in industry. Cambridge: Harvard Univ. Press, 1960. Pp. xviii, 300. \$6.
- ROBERTS, B. C. Trade unions in a free society—studies in the organisation of labour in Britain and the U.S.A. 2nd ed. London: Hutchinson for Inst. of Econ. Affairs, 1962. Pp. 206. 30s.
- ROVENSKIY, Z., UYEMOV, A. AND UYEMOVA, Y. Man and machine—USSR. Washington: Joint Pub. Research Svce., 1961. Pp. 109.
- UDELL, G. G., comp. Compilation of laws relating to mediation, conciliation, and arbitration between employers and employees, laws disputes between carriers and employers, and subordinate officials under Labor Board, eight-hour laws, employers' liability laws, labor and child labor laws. Washington: Supt. Docs., 1961. Pp. 786.
- WEBER, A. R., ed. The structure of collective bargaining—problems and perspectives. Proceedings of a seminar sponsored by Graduate School of Business—University of Chicago and The McKinsey Foundation. New York: Free Press of Glencoe for Grad. School of Bus., Univ. of Chicago. Pp. xxxii, 380. \$8.50.
- Administration of the Labor-management Relations act by the NLRB. Hearings before the Subcommittee on National Labor Relations Board of the House Committee on Education and Labor, 87th Cong., 1st sess. Pt. 1, May 8-22, 1961. Pt. 2, May 23, June 12-29, 1961. Washington: Supt. Docs., 1961. Pp. 868; 748.
- District of Columbia unemployment compensation act, 1961. Hearing before the Subcommittee on Public Health, Education, Welfare, and Safety of the Senate Committee on the District of Columbia, 87th Cong., 1st sess., Aug. 3, 1961. Washington: Supt. Docs., 1961. Pp. 93.
- Employment and unemployment. Hearings before the Subcommittee on Economic Statistics of the Joint Economic Committee, 87th Cong., 1st sess., Dec. 18-20, 1961. Washington: Supt. Docs., 1962. Pp. iv, 399. \$1.
- Employment and unemployment. Report of the Subcommittee on Economic Statistics to the Joint Economic Committee, with minority views, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. vii, 21. 15¢.
- Employment objectives in economic development—report of a meeting of experts. Geneva: Internat. Lab. Office, 1961. Pp. xi, 255. \$2.75.
- Group wage incentives: experience with the Scanlon Plan. IRLM no. 141. New York: Indus. Rel. Counselors, Inc., 1962. Pp. 48. \$1.75.
- Labor-management irregularities. Hearings before the House Committee on Education and Labor, 87th Cong., 1st sess., New York, June 3 and 24, 1961. Washington: Supt. Docs., 1961. Pp. 104.
- The migratory farm labor problem in the United States—a report together with individual views to the Senate Committee on Labor and Public Welfare by its Subcommittee on Migratory Labor, 86th Cong., 2nd sess. Washington: Supt. Docs., 1961. Pp. 56.
- Migratory labor. Hearings before the Select Subcommittee on Labor of the House Committee on Education and Labor, 87th Cong., 1st sess., May 9-10; New York, May 19-20, 1961. Washington: Supt. Docs., 1961. Pp. 366.

- Ocupacion y desocupacion. Iquique, Antofagasta, La Serena—Coquimbo, Valparaíso—Viña del Mar, Gran Santiago, Concepción, Valdivia, Puerto Montt, Castro. Inst. Econ. pub. no. 44. Santiago: Inst. Econ. Univ. Chile, 1961. Pp. vii, 110.
- Preparing for collective bargaining. Pt. 2. Personnel policy stud. no. 182. New York: Nat. Indus. Conf. Board, 1961. Pp. 121.
- The public interest in national labor policy. By an independent study group. New York: Com. for Econ. Develop. for Labor Study Group, 1961. Pp. 158. \$2.
- 1960 Statistical supplement—*Monthly Labor Review*, pts. 1 and 2. Washington: Supt. Docs., n.s. Pp. iii, 44; iii, 39. 50¢; 35¢.
- Wagakuni chingin-kōzō no shiteki kōsatsu. (A historical study of Japanese wage structure.) Tokyo: Shiseidō, for Shōwa Dōjin Kai, 1960. Pp. 549. ¥ 2000.

Population; Welfare Programs; Consumer Economics

- BEYER, G. H. Economic aspects of housing for the aged. Research rept. no. 4. Ithaca: Center for Housing and Environmental Stud., Cornell Univ., 1961. Pp. vii, 59. \$2.50.
- BRAND, W. Bevolkingsexplosie. (The accelerated growth of population and economic welfare.) Amsterdam: E. M. Querido, 1961. Pp. 157. f 1.75.
- CRAMER, J. S. The ownership of major consumer durables—a statistical survey of motor-cars, refrigerators, washing machines and television sets in the Oxford Savings Survey of 1953. New York: Cambridge Univ. Press, 1962. Pp. xi, 80. \$4.50.
- DAVID, M. Family composition and consumption. Amsterdam: North-Holland Pub. Co., 1962. Pp. viii, 110. \$2.80.
- GIRARD, A. La réussite sociale en France. Ses caractères, ses lois, ses effets. Paris: Presses Univ. de France, 1961. Pp. 356. NF 12.
- HAMILTON, D. The consumer in our economy. Boston: Houghton Mifflin, 1962. Pp. ix, 473. \$6.50.
- HARRINGTON, M. The other America—poverty in the United States. New York: Macmillan, 1962. Pp. 191. \$4.
- HUDDLESTON, E. M. Opening (fall) enrollment in higher education, 1960: analytic report. Dept. of Health, Ed., and Welfare pub. no. 652. Washington: Supt. Docs., 1961. Pp. vii, 43. 35¢.
- JACKSON, F. H. Restrictions on the supply of medical services in Hawaii. Honolulu: Econ. Research Center, Univ. of Hawaii, 1961. Pp. 42, mimeo.
- LAROQUE, P., ed. Succès et faiblesses de l'effort social français. Paris: A. Colin, 1961. Pp. 368. NF 20.
- MALISOFF, H. The insurance character of unemployment insurance. Unemployment Insurance monogr. no. 3. Kalamazoo: W. E. Upjohn Inst. for Employment Research, 1961. Pp. 44.
- MCGILL, D. M. Fulfilling pension expectations. Homewood, Ill.: Irwin for Pension Research Council, Wharton School of Finance and Commerce, Univ. of Pennsylvania, 1962. Pp. xxvii, 314. \$6.75.
- Based on an inquiry made by the Pension Research Council of the University of Pennsylvania into the security behind benefit expectations. "Simply stated, the basic premise of this study is that a pension plan is a collection of promises which an employer expects to keep and which his employees expect to be kept. . . . This study does not attempt to place relative priorities on the pluralistic objectives of these groups. It seeks only to provide practical and meaningful guides to the attainment of the pension security goal."
- PRESSAT, R. L'analyse démographique, méthodes, résultats, applications. Paris: Presses Univ. de France, 1961. Pp. viii, 408. NF 40.
- SEIBERT, I. N., WADDELL, J. N. AND MURPHY, L. R., comp. State plans for improving statistical services. Dept. of Health, Ed. and Welfare, Office of Ed., bull. 1961, no. 16. Washington: Supt. Docs., 1961. Pp. vi, 173. 65¢.
- TURNBULL, J. G., WILLIAMS, C. A., JR. AND CHEIT, E. F. Economic and social security. 2nd ed. New York: Ronald Press, 1962. Pp. v, 552. \$8.

- WEISBROD, B. A. Economics of public health—measuring the economic impact of diseases. Philadelphia: Univ. of Pennsylvania Press, 1961. Pp. xv, 127. \$5.
- Consumer protection activities of federal departments and agencies—eighth report. House Committee on Government Operations, 87th Cong., 1st sess. Washington: Supt. Docs., 1961. Pp. 338.
- Manuals on methods of estimating population. Manual 1, methods of estimating total population for current dates. Pop. stud., no. 10. New York: Dept. of Soc. Affairs, Pop. Div., U. N., 1952, reprinted 1961. Pp. vi, 45. 75¢.
- Social security programs throughout the world 1961. Dept. of Health, Ed. and Welfare, Soc. Security Admin., Div. of Program Research. Washington: Supt. Docs., 1961. Pp. xxiii, 203. \$1.50.

Related Disciplines

- ALEXANDER, R. J. Prophets of the revolution—profiles of Latin American leaders. New York: Macmillan, 1962. Pp. viii, 322. \$4.95.
- BENSON, G. C. S., DIAMOND, M., MCCLELLAND, H. F., STOKES, W. S. AND THOMSON, P. Essays in federalism. Claremont, Calif.: Inst. for Stud. in Federalism, Claremont Men's College, 1961. Pp. xiii, 220. \$4.50.
- BLAU, P. M. AND SCOTT, W. R. Formal organizations—a comparative approach. San Francisco: Chandler, 1962. Pp. x, 312. \$5.25.
- BOULDING, K. E. Conflict and defense—a general theory. New York: Harper, for Center for Research in Conflict Resolution, Univ. of Michigan, 1962. Pp. ix, 349. \$7.
- BUCHANAN, J. M. AND TULLOCK, G. The calculus of consent—logical foundations of constitutional democracy. Ann Arbor: Univ. of Michigan Press, 1962. Pp. xi, 361. \$6.95.
- CHAI, C. AND CHAI, W. The changing society of China. New York: New Am. Lib., 1962. Pp. 253. Paper, 75¢.
- DE WITT, N. Education and professional employment in the U.S.S.R. Office of Scientific Personnel, Nat. Acad. Sci., Nat. Research Council for Nat. Sci. Foundation. Washington: Supt. Docs., 1961. Pp. xxxix, 856. \$5.50.
- MAIN, J. T. The Antifederalists—critics of the Constitution 1781-1788. Chapel Hill: Univ. of North Carolina Press for Inst. of Early Am. History and Culture, Williamsburg, Virginia, 1961. Pp. xv, 308. \$7.50.
- MELMAN, S. The peace race. New York: Braziller, 1961. Pp. viii, 152. \$3.95.
- PATTERSON, E. W. Legal protection of private pension expectations. Homewood, Ill.: Irwin, for Pension Research Council, Wharton School of Fin. and Commerce, Univ. of Pennsylvania, 1960. Pp. xxiii, 286. \$6.75.
- PERKINS, D. AND SNELL, J. L. The education of historians in the United States. New York: McGraw-Hill, 1962. Pp. xiii, 244. \$4.95.
- PEYRET, H. Les États-Unis. Le monde a changé no. 2. Paris: Presses Univ. de France, 1961. Pp. 284. NF 20.
- THEOBALD, R. The challenge of abundance. New York: New Am. Library, 1962. Pp. xi, 192. Paper, 60¢.
- WEIDNER, E. W. The world role of universities. New York: McGraw-Hill, 1962. Pp. xii, 366. \$6.95.
- Bibliography of research in the social sciences in Australia 1957-1960. Canberra City: Soc. Sci. Research Council of Australia, 1961. Pp. 67.
- Federal budgeting for research and development. Hearings before the Subcommittee on Reorganization and International Organizations of the Senate Committee on Government Operations, 87th Cong., 1st sess. Pt. 2, July 26-27, 1961. Washington: Supt. Docs., 1962. Pp. 207.
- A select bibliography—Asia, Africa, Eastern Europe, Latin America. Suppl. 1961. New York: Am. Univ. Field Staff, 1961. Pp. iv, 75. Paper, \$1.
- Social Science Research Council annual report 1960-1961. New York: Soc. Sci. Research Council. Pp. 105.

PERIODICALS

General Economics; Methodology

- ARCHIBALD, G. C. Chamberlin *versus* Chicago. *Rev. Econ. Stud.*, Oct. 1961, pp. 2-28.
GORDON, B. J. Aristotle, Schumpeter, and the Metallist tradition. *Quart. Jour. Econ.*, Nov. 1961, pp. 608-14.
KOCH, W. Ethik und Ökonomik. *Zeitschr. f. die ges. Staatswiss.*, Dec. 1961, pp. 577-609.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- ABAY-NEUBAUER, J. Der wirtschaftliche kreislauf auf geldlicher und sachlicher Grundlage (II). *Schmollers Jahrb.*, 81 (6), pp. 81-99.
ANDERSON, P. S. The apparent decline in capital-output ratios. *Quart. Jour. Econ.*, Nov. 1961, pp. 615-34.
BASHKIN, P. Differential ground rent in Soviet collective farm production. *Prob. Econ.*, Nov. 1961, pp. 42-48.
BECKER, G. S. Irrational behavior and economic theory. *Jour. Pol. Econ.*, Feb. 1962, pp. 1-13.
BLANK, D. M. Cyclical behavior of national advertising. *Jour. Bus. Univ. Chicago*, Jan. 1962, pp. 14-27.
BORCHARDT, K. Albert Schäffle als Wirtschaftstheoretiker. *Zeitschr. f. die ges. Staatswiss.*, Dec. 1961, pp. 610-34.
BREWER, M. F. Public pricing of natural resources. *Jour. Farm Econ.*, Feb. 1962, pp. 35-49.
BRONFENBRENNER, M. Notes on the elasticity of derived demand. *Oxford Econ. Papers*, Oct. 1961, pp. 254-61.
BUCHANAN, J. M. Politics, policy and the Pigovian Margins. *Economica*, Feb. 1962, pp. 17-28.
CHAMBERLIN, E. H. The origin and early development of monopolistic competition theory. *Quart. Jour. Econ.*, Nov. 1961, pp. 515-43.
COLE, H. J. D., HOLLAND, D. G., AND POSNER, M. V. Factory productivity and efficiency. *Bull. Oxford Univ. Inst. Stat.*, Nov. 1961, pp. 305-42.
DAVIS, R. M. Income distribution in a two-sector economy. *Oxford Econ. Papers*, Oct. 1961, pp. 312-22.
DENIS, H. Inflation par les coûts et structures économiques. *Rev. Econ.*, Jan. 1962, pp. 1-21.
DICKS-MIREAUX, L. A. The interrelationship between cost and price changes, 1946-1959: a study of inflation in post-war Britain. *Oxford Econ. Papers*, Oct. 1961, pp. 267-92.
DOMAR, E. D. On the measurement of technological change. *Econ. Jour.*, Dec. 1961, pp. 709-29.
ELLSBERG, D. Risk, ambiguity, and the savage axioms. *Quart. Jour. Econ.*, Nov. 1961, pp. 643-69.
FELLNER, W. Distortion of subjective probabilities as a reaction to uncertainty. *Quart. Jour. Econ.*, Nov. 1961, pp. 670-89.
FERBER, R. Research on household behavior. *Am. Econ. Rev.*, Mar. 1962, pp. 19-63.
FERGUSON, C. E. Inflation, fluctuations, and growth in a dynamic input-output model. *So. Econ. Jour.*, Jan. 1962, pp. 251-64.

- FISHER, M. R. Towards a theory of diversification. *Oxford Econ. Papers*, Oct. 1961, pp. 293-311.
- FISHLOW, A. AND DAVID, P. Optimal resource allocation in an imperfect market setting. *Jour. Pol. Econ.*, Dec. 1961, pp. 529-46.
- FOG, B. Deskriptiv pristeori II: er graenseteorien i overensstemmelse med virkeligheden? *Nationaløk. Tids.*, 1961, 99 (3-4), pp. 125-39.
- FRANK, M. Les coûts de base cumulés de l'économie belge en 1953. *Cahiers Econ. de Bruxelles*, Oct. 1961, pp. 547-82.
- FRANK, R. E. Brand choice as a probability process. *Jour. Bus. Univ. Chicago*, Jan. 1962, pp. 43-56.
- FRISCH, R. Verdifaste låneformer. *Stat. Tids.*, Sept. 1961, pp. 198-212.
- FULLER, W. A. Estimating the reliability of quantities derived from empirical production functions. *Jour. Farm Econ.*, Feb. 1962, pp. 82-99.
- GREEN, H. A. J. Dynamic equilibrium and instability in the sense of Harrod. *Economica*, Feb. 1962, pp. 53-57.
- . The social optimum in the presence of monopoly and taxation. *Rev. Econ. Stud.*, Oct. 1961, pp. 66-78.
- GREENHUT, M. L. A general theory of maximum profits. *So. Econ. Jour.*, Jan. 1962, pp. 278-85.
- GUILLEBAUD, C. W. The variorum edition of Alfred Marshall's *Principles of Economics*. *Econ. Jour.*, Dec. 1961, pp. 677-90.
- HART, P. E. The size and growth of firms. *Economica*, Feb. 1962, pp. 29-39.
- HENN, R. Expansionsgleichgewichte bei vollständiger Konkurrenz. *Zeitschr. f. die ges. Staatswiss.*, Jan. 1962, pp. 62-74.
- HERLITZ, L. Trends in the development of physiocratic doctrine. *Scan. Econ. Hist. Rev.*, 1961, 9 (2), pp. 107-51.
- HOUTHAKKER, H. S. The present state of consumption theory. *Econometrica*, Oct. 1961, pp. 704-40.
- JASZI, G. The measurement of aggregate economic growth: a review of key conceptual and statistical issues as suggested by United States experience. *Rev. Econ. Stat.*, Nov. 1961, pp. 317-32.
- JOHANSEN, L. A method for separating the effects of capital accumulation and shifts in production functions upon growth in labour productivity. *Econ. Jour.*, Dec. 1961, pp. 775-82.
- JOHNSTON, J. An econometric model of the United Kingdom. *Rev. Econ. Stud.*, Oct. 1961, pp. 29-39.
- JUBIN, P. AND BOCCON-GIBOD, A. L'inflation des coûts. *Rev. Econ.*, Jan. 1962, pp. 22-28.
- KANESATHASAN, S. Variable depreciation allowances as a means of stabilizing business investment. *Pub. Fin./Fin. Publiques*, 1961, 16 (3-4), pp. 286-309.
- KAUDER, E. Freedom and economic theory—second research report on Menger's unpublished paper. *Hitotsubashi Jour. Econ.*, Sept. 1961, pp. 67-82.
- KERSCHAGL, R. Marktwirtschaft und Zwangswirtschaft. *Schmollers Jahrb.*, 81 (6), pp. 1-22.
- KEYSERLING, L. H. Growth economics: the crucial issues. *Bus. Horizons*, Winter 1961, pp. 51-66.
- LEONTIEF, W. Lags and the stability of dynamic systems. *Econometrica*, Oct. 1961, pp. 659-69.
- LIVIERATOS, A. C. On the cost of production in the short run. *Ekon. Tids.*, Dec. 1961, pp. 247-70.
- MANDELBROT, B. Paretian distributions and income maximization. *Quart. Jour. Econ.*, Feb. 1962, pp. 57-85.

- . Stable Paretian random functions and the multiplicative variation of income. *Econometrica*, Oct. 1961, pp. 517-43.
- MANNE, A. S. Capacity expansion and probabilistic growth. *Econometrica*, Oct. 1961, pp. 632-49.
- MANSFIELD, E. Technical change and the rate of imitation. *Econometrica*, Oct. 1961, pp. 741-66.
- MARTIN, D. D. Monopoly power and the durability of durable goods. *So. Econ. Jour.*, Jan. 1962, pp. 271-77.
- MASSELL, B. F. A disaggregated view of technical change. *Jour. Pol. Econ.*, Dec. 1961, pp. 547-57.
- MCDONALD, S. L. Percentage depletion and the allocation of resources: the case of oil and gas. *Nat. Tax Jour.*, Dec. 1961, pp. 323-36.
- NELSON, R. R. Uncertainty, learning, and the economics of parallel research and development efforts. *Rev. Econ. Stat.*, Nov. 1961, pp. 351-64.
- NEUBERGER, E. The theory of interest in centrally planned economies. *Econ. Internaz.*, Nov. 1961, pp. 616-32.
- NEWMAN, P. AND WOLFE, J. N. A model for the long-run theory of value. *Rev. Econ. Stud.*, Oct. 1961, pp. 51-61.
- OXENFELD, A. R. AND BAXTER, W. T. Approaches to pricing: economist vs accountant. *Bus. Horizons*, Winter 1961, pp. 77-90.
- PEARCE, I. F. An exact method of consumer demand analysis. *Econometrica*, Oct. 1961, pp. 499-516.
- PFOUTS, R. W. The theory of cost and production in the multi-product firm. *Econometrica*, Oct. 1961, pp. 650-58.
- PHILLIPS, A. W. Employment, inflation and growth. *Economica*, Feb. 1962, pp. 1-16.
- ROBINSON, J. The basic theory of normal prices. *Quart. Jour. Econ.*, Feb. 1962, pp. 1-19.
- ROTHSCHILD, K. W. Some recent contributions to a macro-economic theory of income distribution. *Scot. Jour. Pol. Econ.*, Oct. 1961, pp. 173-99.
- SAMUELS, W. J. The physiocratic theory of economic policy. *Quart. Jour. Econ.*, Feb. 1962, pp. 145-62.
- SAMUELSON, P. A. Economists and the history of ideas. *Am. Econ. Rev.*, Mar. 1962, pp. 1-18.
- SAVING, T. R. Estimation of optimum size of plant by the survivor technique. *Quart. Jour. Econ.*, Nov. 1961, pp. 569-607.
- SCOTT, R. H. "Inferior" factors of production. *Quart. Jour. Econ.*, Feb. 1962, pp. 86-97.
- SIEBER, H. Wird es nie mehr Wirtschaftskrisen geben? *Wirtschaft und Recht*, 1961, pp. 224-41.
- STIGLER, G. J. Administered prices and oligopolistic inflation. *Jour. Bus. Univ. Chicago*, Jan. 1962, pp. 1-13.
- STONE, R. A demonstration model for economic growth. *Man. School Econ. Soc. Stud.*, Jan. 1962, pp. 1-14.
- TINBERGEN, J. The spatial dispersion of production: a hypothesis. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Dec. 1961, pp. 412-19.
- UZAWA, H. On a two-sector model of economic growth. *Rev. Econ. Stud.*, Oct. 1961, pp. 4-7.
- . The stability of dynamic processes. *Econometrica*, Oct. 1961, pp. 617-31.
- VARGA, S. Ueber Probleme der Nachfrageelastizitäten mit besonderer Berücksichtigung der Volkswirtschaftsplanung in sozialistischen Ländern. *Econ. Internaz.*, Nov. 1961, pp. 633-56.
- VIBE-PEDERSEN, J. Indkomstkredsløbet og den makroøkonomiske teori for indkomstdannelsen og indkomstfordelingen. I. *Nationaløk. Tids.*, 1961, 99 (3-4), pp. 147-72.

- WALTERS, A. A. The theory and measurement of private and social cost of highway congestion. *Econometrica*, Oct. 1961, pp. 676-99.
- WECKSTEIN, R. S. Welfare criteria and changing tastes. *Am. Econ. Rev.*, Mar. 1962, pp. 133-53.
- WINGER, A. R. Housing space demands: a cross section analysis. *Land Econ.*, Feb. 1962, pp. 33-42.

Economic History; Economic Development; National Economies

- ABEL, W. Zur Entwicklung des Sozialprodukts in Deutschland im 16. Jahrhundert. Versuch eines Bruckenschlags zwischen Wirtschaftstheorie und Wirtschaftsgeschichte. *Jahrb. Nationalök. und Stat.*, Sept. 1961, pp. 448-89.
- AL-ARABI, M. A modern apprenticeship scheme in the United Arab Republic. *Internat. Lab. Rev.*, Dec. 1961, pp. 478-98.
- ALEXANDER, J. W. AND LINDBERG, J. B. Measurements of manufacturing: coefficients of correlation. *Jour. Reg. Sci.*, Summer 1961, pp. 71-81.
- ALTERSOHN, C. La collaboration des pays de l'Est à l'équipement des pays non communistes en voie de développement. *Rev. Écon.*, Jan. 1962, pp. 117-39.
- ARA, K. Labor, capital and land in economic growth. *Hitotsubashi Jour. Econ.*, Sept. 1961, pp. 26-41.
- ARNAUDO, A. A. Agricultura y desarrollo económico. *Económica*, July 1958-June 1959, pp. 15-36.
- BAER, W. The economics of Prebisch and ECLA. *Econ. Develop. and Cult. Change*, Jan. 1962 Part I, pp. 169-82.
- BORCHARDT, K. Zur Frage des Kapitalmangels in der ersten Hälfte des 19. Jahrhunderts in Deutschland. *Jahrb. Nationalök. und Stat.*, Sept. 1961, pp. 401-21.
- BORNSTEIN, M. The Soviet price system. *Am. Econ. Rev.*, Mar. 1962, pp. 64-103.
- BROWN, S. D. Okubo Toshimichi: his political and economic policies in early Meiji Japan. *Jour. Asian Stud.*, Feb. 1962, pp. 183-98.
- CHERUBINO, S. Sviluppo economico e variazioni secolari dei prezzi. *Rassegna Econ.*, Sept.-Dec. 1961, pp. 555-76.
- CHOMBART DE LAUWE, J. L'Industrialisation de l'agriculture. *Rev. d'Écon. Pol. (France)*, Nov.-Dec. 1961, pp. 751-63.
- COLM, G. AND GEIGER, T. La programación como una guía para el desarrollo. *El Trimestre Econ.*, Jan.-Mar. 1962, pp. 101-24.
- DEANE, P. The long term trends in world economic growth. *Malayan Econ. Rev.*, Oct. 1961, pp. 14-26.
- DELL'AMORE, G. Il processo di formazione delle decisioni economiche nel mondo contemporaneo. *Risparmio*, Nov. 1961, pp. 2069-84.
- DI TELLA, T. S. Economía y estructura ocupacional en un país subdesarrollado. *Desarrollo Econ.*, Oct.-Dec. 1961, pp. 123-54.
- FEI, J. C. H. AND RANIS, G. Unlimited supply of labour and the concept of balanced growth. *Pakistan Develop. Rev.*, Winter 1961, pp. 29-58.
- FURTADO, C. Análisis del desarrollo del Brasil. *Rev. Econ. Latinoamericana*, June 1961, pp. 18-52.
- GARRIGOU-LAGRANGE, A. Les transformations du capitalisme à l'époque contemporaine. *Riv. Internaz. di Sci. Econ. e Com.*, Dec. 1961, pp. 1101-14.
- GERMANI, G. Estrategia para estimular la movilidad social. *Desarrollo Econ.*, Oct.-Dec. 1961, pp. 59-96.
- GHOSH, S. On inflation and economic development. *Econ. Internaz.*, Nov. 1961, pp. 581-90.
- GLASSBURNER, B. Economic policy-making in Indonesia, 1950-57. *Econ. Develop. and Cult. Change*, Jan. 1962 Part I, pp. 113-33.
- GOODWIN, R. M. The optimal growth path for an underdeveloped economy. *Econ. Jour.*, Dec. 1961, pp. 756-74.

- GRAZIANI, A. I criteri di investimento nei paesi sottosviluppati: in margine ad una recente polemica. *Econ. Internaz.*, Nov. 1961, pp. 591-615.
- HAAVELMO, T. The race between population and economic progress. *Stat. Tids.*, Sept. 1961, pp. 237-43.
- HARRIS, C. L. L'Économie américaine en 1960: prospérité et déception. *Rev. de Sci. Fin.*, Oct. 1961, pp. 581-96.
- HARTWELL, R. A revolution in the Chinese iron and coal industries during the Northern Sung, 960-1126 A.D. *Jour. Asian Stud.*, Feb. 1962, pp. 153-62.
- HASAN, P. Balance of payments problems of Pakistan. *Pakistan Develop. Rev.*, Autumn 1961, pp. 15-48.
- HESSE, H. Der Einfluss des Staates auf die wirtschaftliche Entwicklung. *Zeitschr. f. die ges. Staatswiss.*, Dec. 1961, pp. 635-57.
- ITAGAKI, Y. Strategy and policy of economic development in underdeveloped countries: a significance of the stage theory. *Hitotsubashi Jour. Econ.*, Sept. 1961, pp. 1-12.
- IVERSEN, C. Problems of inflation in developing countries. *Stat. Tids.*, Sept. 1961, pp. 213-36.
- KOLOSOVSKIY, N. N. The territorial production combination (complex) in Soviet economic geography. *Jour. Reg. Sci.*, Summer 1961, pp. 1-26.
- KROGH, D. C. An input-output analysis of the South African economy—1956-57. *So. Afr. Jour. Econ.*, Dec. 1961, pp. 258-74.
- KUZNETS, S. Quantitative aspects of the economic growth of nations: VII. The share and structure of consumption. *Econ. Develop. and Cult. Change*, Jan. 1962 Part II, pp. 1-92.
- LAL, B. B. The productivity-movement in India. *Indian Jour. Econ.*, Jan. 1960, pp. 253-60.
- LAUTERBACH, A. Actitudes empresariales y desarrollo económico. *Rev. Econ. Latinoamericana*, June 1961, pp. 53-97.
- LUTZ, V. Alcuni aspetti strutturali del problema del Mezzogiorno: la complementarità dell'emigrazione e dell'industrializzazione. *Moneta e Credito*, Dec. 1961, pp. 407-43.
- MASERA, F. Evoluzione strutturale della bilancia dei pagamenti nei prima cento anni dell'Unità d'Italia. *Mondo Aperto*, Oct. 1961, pp. 277-302.
- NERLOVE, M. A quarterly econometric model for the United Kingdom (Review Article). *Am. Econ. Rev.*, Mar. 1962, pp. 154-76.
- ORTEGA MATA, R. Los servicios públicos en relación con la tecnología, la economía y el derecho en los países poco desarrollados. *Rev. Mexicana de Soc.*, May-Aug. 1961, pp. 385-402.
- PASTORE, J. M. D. La doctrina del "crecimiento balanceado": sus perspectivas en 1960. *Desarrollo Econ.*, Oct.-Dec. 1961, pp. 5-58.
- PATRICK, H. T. Lessons for under-developed countries from the Japanese experience of economic development. *Indian Econ. Jour.*, Oct. 1961, pp. 150-66.
- PEACOCK, A. T. Economic problems of a multi-racial society—the Fiji case. *Scot. Jour. Pol. Econ.*, Oct. 1961, pp. 233-45.
- PIATIER, A. Il contributo delle scienze sociali allo sviluppo economico. *Rassegna Econ.*, Sept.-Dec. 1961, pp. 469-513.
- PILVIN, H. Recent flows of United States funds to underdeveloped countries. *So. Econ. Jour.*, Jan. 1962, pp. 265-70.
- PORTER, R. C. The dangers of monetary policy in agrarian economics. *Pakistan Develop. Rev.*, Winter 1961, pp. 59-72.
- ROMERO, A. L. Desarrollo económico de México (1934-1959). *El Trimestre Econ.*, Jan.-Mar. 1962, pp. 30-68.
- ROSENSTEIN-RODAN, P. El desarrollo económico de Italia durante la década de 1950. *Rev. Econ. Latinoamericana*, June 1961, pp. 98-114.
- RUBAN, M.-E. Private consumption in the USSR: changes in the assortment of goods, 1940-1959. *Soviet Stud.*, Jan. 1962, pp. 237-54.

- SCOTT, A. The development of the extractive industries. *Can. Jour. Econ. Pol. Sci.*, Feb. 1962, pp. 70-87.
- SHIZUTA, H. Imperialism as a concept. *Kyoto Univ. Econ. Rev.*, Apr. 1961, pp. 1-13.
- SHORTER, F. C. Planning procedures in Pakistan. *Pakistan Develop. Rev.*, Autumn 1961, pp. 1-14.
- SIDDIQI, Q. H. The pattern of public policy in an underdeveloped country. *Indian Jour. Econ.*, Jan. 1960, pp. 235-52.
- SINGER, H. W. Tendencias recientes del pensamiento económico sobre los países sub-desarrollados. *Rev. Econ. Latinoamericana*, June 1961, pp. 115-57.
- SINGER, H. W. Trends in economic thought on underdevelopment. *Soc. Research*, Winter 1961, pp. 387-414.
- SKRUBBELTRANG, F. Developments in tenancy in eighteenth-century Denmark as a move towards peasant proprietorship. *Scan. Econ. Hist. Rev.*, 1961, 9 (2), pp. 165-75.
- SMEKHOF, B. Measuring the effectiveness of capital investments. *Prob. Econ.*, Oct. 1961, pp. 32-38.
- SMITH, P. E. Markov chains, exchange matrices, and regional development. *Jour. Reg. Sci.*, Summer 1961, pp. 27-36.
- SOIVIO, A. AND HEIKKONEN, E. Talouspoliittinen moniyhtälömalli. *Liiketaloudellinen Aikakauskirja*, 1961, 3, pp. 224-52.
- STOLPER, W. F. AND ROSKAMP, K. W. An input-output table for East Germany with applications to foreign trade. *Bull. Oxford Univ. Inst. Stat.*, Nov. 1961, pp. 379-92.
- TESDELL, L. Planning for technical assistance: Iraq and Jordan. *Middle East Jour.*, Autumn 1961, pp. 389-402.
- TOPALOVIĆ, Z. Who are the factory owners? Review (*Stud. Centre Yugoslav Affairs*), 1961, 2 (2), pp. 79-93.
- TRUW, M. L. Some reflections on economic planning and the Soviet consumer. *So. Afr. Jour. Econ.*, Dec. 1961, pp. 275-87.
- URQUIDY, V. L. El desarrollo latinoamericano, el capital extranjero y la transmisión de la tecnología. *El Trimestre Econ.* Jan.-Mar. 1962, pp. 19-29.
- VAN DER WEE, H. De crisissen van het Ancien Régime als spiegel voor de studie der hongersnoodcycli in de onderontwikkelde landen. (With English summary.) *Tijdschrift v. Econ.*, 1961, 6 (4), pp. 415-36.
- VÖCHTING, F. Die Industrialisierung Siziliens. *Zeitschr. f. die ges. Staatswiss.*, Dec. 1961, pp. 679-761.
- ZORN, W. Schwerpunkte der deutschen Ausfuhrindustrie im 18. Jahrhundert. *Jahrb. Nationalök. und Stat.*, Sept. 1961, pp. 422-47.
- Report on Latin America. *Iowa Bus. Digest*, Fall 1961, pp. 1-34.
- The tasks of economic history 1961: colonialism and colonization in world history. *Jour. Econ. Hist.*, Dec. 1961, pp. 443-651.

Statistical Methods; Econometrics; Social Accounting

- ABRAHAM, J. An approximate method for convex programming. *Econometrica*, Oct. 1961, 700-3.
- ARROW, K. J. AND ENTHEOVEN, A. C. Quasi-concave programming. *Econometrica*, Oct. 1961, 779-800.
- BANERJEE, K. S. A unified statistical approach to the index number problem. *Econometrica*, Oct. 1961, pp. 591-601.
- COSCIANI, C. Il bilancio pubblico e la contabilità economica nazionale. *Rassegna Econ.*, Sept.-Dec. 1961, pp. 514-36.
- DANTZIG, G. B. AND WOLFE, P. The decomposition algorithm for linear programs. *Econometrica*, Oct. 1961, pp. 767-78.
- FISHER, F. M. Identifiability criteria in nonlinear systems. *Econometrica*, Oct. 1961, pp. 574-90.

- GOLDBERGER, A. S., NAGAR, A. L. AND ODEH, H. S. The covariance matrices of reduced-form coefficients and of forecasts for a structural econometric model. *Econometrica*, Oct. 1961, pp. 556-73.
- GUITION, H. L'analyse économique comprise comme un filtrage. *Riv. Internaz. di Sci. Econ. e Com.*, Jan. 1962, pp. 1-11.
- HOOPER, J. W. AND ZELLNER, A. The error of forecast for multivariate regression models. *Econometrica*, Oct. 1961, pp. 544-55.
- KLOEK, T. AND DE WIT, G. M. Best linear and best linear unbiased index numbers. *Econometrica*, Oct. 1961, pp. 602-16.
- LÁRUSSON, B. Valuation and distribution of landed property in Iceland. *Econ. and Hist.*, 1961, pp. 34-64.

Economic Systems; Planning and Reform; Cooperation

- KURABAYASHI, Y. A national budget model for economic planning. *Hitotsubashi Jour. Econ.*, Sept. 1961, pp. 56-66.
- KUROWSKI, L. Les finances dans les états socialistes. *Rev. de Sci. Fin.*, Oct. 1961, pp. 597-663.
- LECHNER, H. H. Soziale Marktwirtschaft und Neoliberalismus im Urteil der katholischen Soziallehre. *Schmollers Jahrb.*, 81 (6), pp. 23-64.
- PERVUSHIN, S. The law of value and prices in a socialist economy. *Prob. Econ.*, Dec. 1961, pp. 11-17.

Business Fluctuations

- BASSIE, V. L. Critique of long-range forecasting. *Quart. Rev. Econ. and Bus.*, Nov. 1961, pp. 41-54.
- CLEMENT, M. O. Automatic stabilizers and business cycle mechanisms. *So. Econ. Jour.*, Jan. 1962, pp. 246-50.
- HOLT, C. C. Linear decision rules for economic stabilization and growth. *Quart. Jour. Econ.*, Feb. 1962, pp. 20-45.
- SUITS, D. B. Forecasting and analysis with an econometric model. *Am. Econ. Rev.*, Mar. 1962, pp. 104-32.

Money; Credit and Banking; Monetary Policy; Mortgage Credit

- ARTIS, M. J. Liquidity and the attack on quantity theory. *Bull. Oxford Univ. Inst. Stat.*, Nov. 1961, pp. 343-66.
- BACH, G. L. Economics, politics, and the Fed. *Harvard Bus. Rev.*, Jan.-Feb. 1962, pp. 81-91.
- BAUMOL, W. J. Stocks, flows and monetary theory. *Quart. Jour. Econ.*, Feb. 1962, pp. 46-56.
- BHATIA, R. J. The role of monetary policy in price stability—the Indian case, 1951-1959. *Rev. Econ. Stat.*, Nov. 1961, pp. 333-39.
- BRUNNER, K. The report of the Commission on Money and Credit. *Jour. Pol. Econ.*, Dec. 1961, pp. 605-20.
- FUJINO, S. Behavior of commercial banks and the supply of money. *Hitotsubashi Jour. Econ.*, Sept. 1961, pp. 42-55.
- HAHN, F. H. Money, dynamic stability and growth. *Metroeconomica*, Aug. 1961, pp. 57-76.
- KUENNE, R. E. The Walrasian theory of money: an interpretation and a reconstruction. *Metroeconomica*, Aug. 1961, pp. 94-105.
- LE BOURVA, J. Création de la monnaie et multiplicateur du crédit. *Rev. Écon.*, Jan. 1962, pp. 29-56.

- LIEFTINCK, P. Nieuwe tendenzen in de monetaire politiek. *De Economist*, Dec. 1961, pp. 833-52.
- MAIER, K. F. Mikro-ökonomische Ableitung des Geldpreises. *Zeitschr. f. die ges. Staatswiss.*, Jan. 1962, pp. 75-94.
- RENOOIJ, D. C. Structuurveranderingen in het Nederlandse algemene bankwezen en de monetaire politiek. *De Economist*, Nov. 1961, pp. 753-74.
- RITTER, L. S. Official central banking theory in the United States, 1939-61. *Jour. Pol. Econ.*, Feb. 1962, pp. 14-29.
- ROBERTSON, D. An American "Radcliffe" Report. *Lloyds Bank Rev.*, Jan. 1961, pp. 16-26.
- SAUVAIN, H. AND BACKMAN, J. The problem of size in commercial banking. *Bus. Horizons*, Winter 1961, pp. 91-102.
- SERTOLI, G. The structure and financial activities of the European regional communities. *Law and Contemp. Prob.*, Summer 1961, pp. 515-38.
- SMITHIES, A. The Commission on Money and Credit. *Quart. Jour. Econ.*, Nov. 1961, pp. 544-68.

Public Finance; Fiscal Policy

- ALBERS, M. W. Die Suche nach der optimalen Umsatzsteuer-Erfahrungen und Reformvorschläge in der Bundesrepublik Deutschland. *Pub. Fin./Fin. Pub.*, 1961, 16 (3-4), pp. 229-65.
- ARNAUDO, A. A. Política fiscal y redistribución del ingreso. *Rev. de Facultad de Ciencias Econ.*, 1961, 5 (1-2), pp. 45-63.
- CARNEY, D. Marginal utility, interpersonal comparisons and the theory of taxation. *Indian Econ. Jour.*, Oct. 1961, pp. 167-77.
- CHRISTIAN, V. L., JR. The incidence of compacts, gasoline consumption and tax revenue. *Nat. Tax Jour.*, Dec. 1961, pp. 375-81.
- COSCIANI, C. Aspects de la fiscalité dans la C.E.E. *Rev. de Sci. Fin.*, Oct. 1961, pp. 550-65.
- FISHER, G. W. Determinants of state and local government expenditures: a preliminary analysis. *Nat. Tax Jour.*, Dec. 1961, pp. 349-55.
- FORTE, F. Il problema della scelta del tipo di imposizione sulle vendite: imposte sul valore aggiunto. *Riv. Internaz. di Sci. Econ. e Com.*, Jan. 1962, pp. 12-46.
- GANGEMI, L. La struttura fiscale italiana nel "bilancio economico nazionale." *Rassegna Econ.*, Sept.-Dec. 1961, pp. 537-54.
- GOFFMAN, I. J. The tax treatment of capital gains in Canada. *Nat. Tax Jour.*, Dec. 1961, pp. 356-61.
- GOODE, R. Taxation of saving and consumption in underdeveloped countries. *Nat. Tax Jour.*, Dec. 1961, pp. 305-22.
- HARRIS, L. Subsidies in the United States. *Pub. Fin./Fin. Pub.*, 1961 16 (3-4), pp. 270-83.
- HICKS, U. K. Plowden, planning and management in the public service. *Pub. Admin.*, Winter 1961, pp. 299-312.
- MAXWELL, J. A. A new proposal for coordination of death taxation. *Nat. Tax Jour.*, Dec. 1961, pp. 382-87.
- MCALLISTER, H. E. The border tax problem in Washington. *Nat. Tax Jour.*, Dec. 1961, pp. 362-74.
- MODIGLIANI, F. Long-run implications of alternative fiscal policies and the burden of the national debt. *Econ. Jour.*, Dec. 1961, pp. 730-55.
- OSWALD, R. Die Staatsschuldenpolitik als Mittel zur Konjunkturbeeinflussung. *Wirtschaft und Recht*, 1961, pp. 242-62.
- SHERE, L. Suggestions for federal tax reform. *Bus. Horizons*, Winter 1961, pp. 29-42.
- SURREY, S. S. AND OLDMAN, O. Report of a preliminary survey of the tax system of Argentina (contd.). *Pub. Fin./Fin. Pub.*, 1961, 16 (3-4), pp. 313-40.

- SZAWLOWSKI, R. The budget and the budgetary law of an international governmental organization. *Pub. Fin./Fin. Pub.*, 1961 16 (3-4), pp. 343-63.
- WITTMANN, W. Die Entwicklung der öffentlichen Ausgaben in der Schweiz seit 1900. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Dec. 1961, pp. 461-74.

International Economics

- ABS, H. J. Capital movements and investment in the European communities. *Law and Contemp. Prob.*, Summer 1961, pp. 508-14.
- ALLEN, J. J. The European Common Market and the General Agreement on Tariffs and Trade: a study in compatibility. *Law and Contemp. Prob.*, Summer 1961, pp. 559-71.
- ANGELL, J. W. The reorganisation of the international monetary system: an alternative proposal. *Econ. Jour.*, Dec. 1961, pp. 691-708.
- AUBOIN, R. L'étalon de change or en pratique: le vrai problème monétaire de l'Occident. *Rev. d'Écon. Pol.*, Nov.-Dec. 1961, pp. 725-50.
- BARDHAN, P. K. Technical progress and terms of trade. *Arthaniti*, July 1961, pp. 97-116.
- BELLONE, G. La progettata riforma del Fondo Monetario Internazionale ed i Paesi in via di sviluppo. *Pol. d. Scambi*, Sept.-Oct. 1961, pp. 5-16.
- BHAGWATI, J. AND JOHNSON, H. G. A generalized theory of the effects of tariffs on the terms of trade. *Oxford Econ. Papers*, Oct. 1961, pp. 225-53.
- BROWN, A. J. Customs union versus economic separatism in developing countries (Part II). *Yorkshire Bull. Econ. Soc. Res.*, Nov. 1961, pp. 88-96.
- COPPÉ, A. The economic and political problems of integration. *Law and Contemp. Prob.*, Summer 1961, pp. 349-63.
- DELIVANIS, D. J. Der Beitritt Griechenlands zur Europäischen Wirtschaftsgemeinschaft. *Zeitschr. f. die ges. Staatswiss.*, Jan. 1962, pp. 23-34.
- DENIAU, J. F. The external policy of the European Economic Community. *Law and Contemp. Prob.*, Summer 1961, pp. 364-80.
- DUCROS, B. Balance des paiements, budget et instabilité de la demande effective dans les pays sous-développés. *Rev. Écon.*, Jan. 1962, pp. 57-86.
- FERICELLI, J. Les conditions monétaires et la réussite d'une dévaluation. *Rev. Écon.*, Jan. 1962, pp. 87-116.
- GARCÍA, N. El mercado común, la industrialización y el desarrollo económico de América Latina. *Rev. de Econ.*, Jan.-Dec. 1960, pp. 11-26.
- GERHARD, H. W. Tariffs and trade in the Common Market. *Law and Contemp. Prob.*, Summer 1961, pp. 539-58.
- JOHNSON, H. G. Effects of changes in comparative costs as influenced by technical change. *Malayan Econ. Rev.*, Oct. 1961, pp. 1-13.
- KELLY, W. B., JR. The "expanded" trade-agreements escape clause, 1955-61. *Jour. Pol. Econ.*, Feb. 1962, pp. 37-63.
- KEMP, M. C. AND JONES, R. W. Variable labor supply and the theory of international trade. *Jour. Pol. Econ.*, Feb. 1962, pp. 30-36.
- PANCHAMUKHI, V. R. A theory of optimum tariff policy. *Indian Econ. Jour.*, Oct. 1961, pp. 178-98.
- POSNER, M. V. International trade and technical change. *Oxford Econ. Papers*, Oct. 1961, pp. 323-41.
- REITSMA, A. J. The "excess costs" of a tariff and their measurement. *Econ. Record*, Dec. 1961, pp. 442-55.
- REUBER, G. L. Western Europe's demand for Canadian industrial materials. *Can. Jour. Econ. Pol. Sci.*, Feb. 1962, pp. 16-34.

- SALLIUS, P-O. Swedish-American treaty policy, 1920-1935. *Econ. and Hist.*, 1961, pp. 65-89.
- SCHULTZ, T. W. U.S. endeavors to assist low-income countries improve economic capabilities of their people. *Jour. Farm Econ.*, Dec. 1961, pp. 1068-76.
- SPAAR, F. AND JAEGER, J. N. The rules of competition within the European Common Market. *Law and Contemp. Prob.*, Summer 1961, pp. 485-507.
- TEUBAL, M. Europa y Latinoamérica ante la integración económica. *Desarrollo Econ.*, Oct.-Dec., 1961, pp. 97-122.
- TRENTON, R. W. The gold problem reconsidered. *So. Econ. Jour.*, Jan. 1962, pp. 286-92.
- VAN DER STICHELE, B. The United States gold outflow and international liquidity. *Tijdschrift v. Econ.*, 1961, 6 (4), pp. 459-82.

Business Finance; Investment and Security Markets; Insurance

- BOWER, R. S. Finance linkage and capital budgeting. *Engin. Econ.*, Winter 1962, pp. 1-22.

Business Organization; Managerial Economics; Marketing; Accounting

- DONALDSON, G. New framework for corporate debt policy. *Harvard Bus. Rev.*, Mar.-Apr. 1962, pp. 117-31.
- JORDAN, L. H. A discussion of the usefulness and theory of direct costing. *N.A.A. Bull.*, Mar. 1962, pp. 53-60.
- KRIEBEL, C. H. Warehousing with transshipment under seasonal demand. *Jour. Reg. Sci.*, Summer 1961, pp. 57-70.
- SOLOMONS, D. The determination of asset values. *Jour. Bus. Univ. Chicago*, Jan. 1962, pp. 28-42.
- WEINWURM, E. H. Economic models and operations research models. *Manag. Internat.*, July-Aug. 1961, pp. 5-14.

Industrial Organization; Government and Business; Industry Studies

- BROCHET, R. Use of productivity measurement for inter-firm comparisons in the French jute industry. *Prod. Meas. Rev.*, Nov. 1961, pp. 40-46.
- DIXON, D. F. The development of the solus system of petrol distribution in the United Kingdom, 1950-1960. *Economica*, Feb. 1962, pp. 40-52.
- DROCKILA, L. Ulkomaisia pääomansijoituksia koskevien lainsäännösten pääpiirteet. *Liiketaloudellinen Aikakauskirja*, 1961, 3, pp. 192-217.
- FRISHAUF, S. H. The present status of antitrust laws in the countries forming the European Economic Community, revised to September 1, 1961. *Antitrust Bull.*, May-June 1961, pp. 245-92.
- GALBRAITH, J. K. Public administration and the public corporation. *Indian Jour. Pub. Admin.*, Oct.-Dec. 1961, pp. 438-46.
- HALE, G. E. AND R. D. Competition or control v: production and distribution of electric energy. *Univ. Penn. Law Rev.*, Nov. 1961, pp. 57-76.
- HULL, W. H. N. The public control of broadcasting: the Canadian and Australian experiences. *Can. Jour. Econ. Pol. Sci.*, Feb. 1962, pp. 114-26.
- McKIE, J. W. AND McDONALD, S. L. Petroleum conservation in theory and practice. *Quart. Jour. Econ.*, Feb. 1962, pp. 98-121.
- SANDS, S. S. Changes in scale of production in United States manufacturing industry, 1904-1947. *Rev. Econ. Stat.*, Nov. 1961, pp. 365-68.
- SCHWARTZMAN, D. The economics of antitrust policy. *Antitrust Bull.*, May-June 1961, pp. 235-44.
- TURNER, D. F. The definition of agreement under the Sherman act: conscious parallelism and refusals to deal. *Harvard Law Rev.*, Feb. 1962, pp. 655-706.

An inter-firm comparison in the European shoe industry—a pilot study. *Prod. Meas. Rev.*, Oct. 1961, pp. 1-69.

Land Economics; Agricultural Economics; Economic Geography; Housing

- BOEHM, G. A. W. Economic realities of water desalting. *Fortune*, Jan. 1962, pp. 97-99.
- BRANDOW, G. E. Reshaping farm policy in 1961. *Jour. Farm Econ.*, Dec. 1961, pp. 1019-31.
- CHISHOLM, M. Agricultural production, location and rent. *Oxford Econ. Papers*, Oct. 1961, pp. 342-59.
- CIRIACY-WANTRUP, S. V. Water quality, a problem for the economist. *Jour. Farm Econ.*, Dec. 1961, pp. 1133-44.
- FERGUSSON, D. A. AND VALENTI, R. F. Housing in a growth economy. *Land Econ.*, Feb. 1962, pp. 9-20.
- FERNÁNDEZ Y FERNÁNDEZ, R. Una doctrina sobre reforma agraria. *El Trimestre Econ.* Jan.-Mar. 1962, pp. 69-94.
- FOX, K. A. The study of interactions between agriculture and the non-farm economy: local, regional and national. *Jour. Farm Econ.*, Feb. 1962, pp. 1-34.
- FRANKLIN, S. H. Social structure and land reform in southern Italy. *Sociol. Rev.*, Nov. 1961, pp. 323-49.
- GAGLIARDINI, G. Produzione e commercio nel mondo di minerale e di metallo di rame. *Pol. d. Scambi*, Sept.-Oct. 1961, pp. 17-50.
- HANSEN, W. B. An approach to the analysis of metropolitan residential extension. *Jour. Reg. Sci.*, Summer 1961, pp. 37-56.
- KAHLON, A. S. Agricultural planning and the price system with special reference to India. *Indian Jour. Econ.*, Jan. 1960, pp. 215-22.
- KELSO, M. M. The stock resource value of water. *Jour. Farm Econ.*, Dec. 1961, pp. 1112-28.
- OHKAWA, K. Balanced growth and the problem of agriculture—with special reference to Asian peasant economy. *Hitotsubashi Jour. Econ.*, Sept. 1961, pp. 13-25.
- SAUSHKIN, J. G. Economic geography in the U.S.S.R. *Econ. Geog.*, Jan. 1962, pp. 28-37.
- SUKHATME, P. V. The world's hunger and future needs in food supplies (with discussion). *Jour. Royal Stat. Soc.*, 1961, 124 (4), pp. 463-525.
- TOLLEY, G. S. The administration's score on the first round. *Jour. Farm Econ.*, Dec. 1961, pp. 1032-45.
- UTTERSTRÖM, G. Population and agriculture in Sweden, circa 1700-1830. *Scan. Econ. Hist. Rev.*, 1961 9 (2), pp. 176-94.
- VALARCHÉ, J. Bonification et réforme agraire dans le delta du Pô. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Dec. 1961, pp. 401-11.
- VASIL'EV, N. The level of per capita agricultural production in the USSR. *Prob. Econ.*, Oct. 1961, pp. 3-12.
- YAMAOKA, R. Agricultural structure in post-war Western Germany. *Kyoto Univ. Econ. Rev.*, Apr. 1961, pp. 53-70.

Labor Economics

- AARON, B. The union member's "Bill of Rights": first two years. *Indus. Rel.*, Feb. 1962, pp. 47-72.
- ALEXANDER, K. Strikes in manufacturing, 1947-57. *Quart. Jour. Econ.*, Feb. 1962, pp. 122-44.
- BARBER, C. L. Canada's unemployment problem. *Can. Jour. Econ. Pol. Sci.*, Feb. 1962, pp. 88-102.
- BATKAEV, R. Changes in the wage rate system in connection with technical progress. *Prob. Econ.*, Dec. 1961, pp. 37-41.

- BERNSTEIN, M. Labor and the European communities. *Law and Contemp. Prob.*, Summer 1961, pp. 572-88.
- COHANY, H. P. Membership of American trade unions, 1960. *Mo. Lab. Rev.*, Dec. 1961, pp. 1299-1308.
- DE VYVER, F. T. Labor arbitration after twenty-five years. *So. Econ. Jour.*, Jan. 1962, pp. 235-45.
- DOWNING, R. I. and ISAAC, J. E. The 1961 basic wage judgment and wage policy. *Econ. Record*, Dec. 1961, pp. 480-94.
- FRANCE, R. R. Wages, unemployment, and prices in the United States, 1890-1932, 1947-1957. *Indus. Lab. Rel. Rev.*, Jan. 1962, pp. 171-90.
- GARBARINO, J. W. Bargaining strategy and the form of contracts. *Indus. Rel.*, Feb. 1962, pp. 73-88.
- HARRISON, R. British labor and American slavery. *Sci. and Soc.*, Dec. 1961, pp. 291-320.
- JACQUES, E. Objective measures for pay differentials. *Harvard Bus. Rev.*, Jan.-Feb. 1962, pp. 133-38.
- KALACHEK, E. AND WESTEBBE, R. Rates of unemployment in Great Britain and the United States, 1950-1960. *Rev. Econ. Stat.*, Nov. 1961, pp. 340-50.
- KASSALOW, E. M. New union frontier: white-collar workers. *Harvard Bus. Rev.*, Jan.-Feb. 1962, pp. 41-52.
- LERNER, S. W. AND MARQUAND, J. Workshop bargaining, wage drift and productivity in the British engineering industry. *Man. School Econ. Soc. Stud.*, Jan. 1962, pp. 15-60.
- LIPSET, S. M. Trade unions and social structure: II. *Indus. Rel.*, Feb. 1962, pp. 89-110.
- LURIE, M. The effect of unionization on wages in the transit industry. *Jour. Pol. Econ.*, Dec. 1961, pp. 558-72.
- MAITLAND, S. T. AND DUCOFF, L. J. The farm labor force: recent trends and future prospects. *Jour. Farm Econ.*, Dec. 1961, pp. 1183-88.
- MAMER, J. W. The use of foreign labor for seasonal farm work in the United States—issues involved and interest groups in conflict. *Jour. Farm Econ.*, Dec. 1961, pp. 1204-9.
- MCCALMONT, D. B. The semi-strike. *Indus. Lab. Rel. Rev.*, Jan. 1962, pp. 191-208.
- MOSKALENKO, G. K. Collective agreements in the U.S.S.R. *Internat. Lab. Rev.*, Jan. 1962, pp. 18-29.
- ROBINSON, D. Wage-rate differentials over time. *Bull. Oxford Univ. Inst. Stat.*, Nov. 1961, pp. 367-78.
- SAUVY, A. AND LERIDON, F. Du calcul des revenus dans une population à la frustration sociale. *Population*, Oct.-Dec. 1961, pp. 605-624.
- SELEKMAN, B. M. Conservative labor/radical business. *Harvard Bus. Rev.*, Mar.-Apr. 1962, pp. 80-92.
- SIMLER, N. J. Unionism and labor's share in manufacturing industries. *Rev. Econ. Stat.*, Nov. 1961, pp. 369-78.
- SPEKRLING, H. Zur Theorie und Methode der Berufsklassifizierung. *Schmollers Jahrb.*, 81 (6), pp. 65-80.
- TAIRA, K. Characteristics of Japanese labor markets. *Econ. Develop. and Cult. Change*, Jan. 1962, Part I, pp. 150-68.
- TRACHTMAN, L. N. The labor movement of Ghana: a study in political unionism. *Econ. Develop. and Cult. Change*, Jan. 1962, Part I, pp. 183-200.
- TRAPPENIERS, F. Gemiddelde lonen en loonstrucuur. (With English summary.) *Tijdschrift v. Econ.*, 1961, 6 (4), pp. 437-58.
- WALLICH, H. C. Can we stop inflationary wage increases? *Harvard Bus. Rev.*, Jan.-Feb. 1962, pp. 6-13.
- Collective bargaining and the American economy. *Sat. Rev.*, Jan. 13, 1962, pp. 19-42.

The European Social Charter and international labour standards: II. *Internat. Lab. Rev.*, Dec. 1961, pp. 462-77.

Special labor force report: marital and family characteristics of workers, March 1961. *Mo. Lab. Rev.*, Jan. 1962, pp. 9-16.

Unemployment and its measurement—a symposium. Unemployment data needs for planning and evaluating policy, by S. Lebergott; Adequacy of unemployment data for government uses, by E. Clague; Growth requirements to reduce unemployment, by R. C. Wilcock and W. H. Franke; Action programs to deal with unemployment, by V. R. Fuchs. *Mo. Lab. Rev.*, Feb. 1962, pp. 125-30.

Population; Welfare Programs; Consumer Economics

ALEXIS, M. Some Negro-white differences in consumption. *Am. Jour. Econ. Soc.*, Jan. 1962, pp. 11-28.

BURK, M. C. Ramifications of the relationship between income and food. *Jour. Farm Econ.*, Feb. 1962, pp. 115-25.

KMENTA, J. Economic mobility of immigrants in Australia. *Econ. Record*, Dec. 1961, pp. 456-69.

SMITH, R. S. Population and economic growth in Central America. *Econ. Develop. and Cult. Change*, Jan. 1962, Part I, pp. 134-49.

Work and leisure in modern society—a symposium. Labor and leisure: intellectual traditions, by H. L. Wilensky; Work and leisure in French sociology, by J. Dumazedier and N. Latouche; The sociology of leisure: some suggestions, by B. M. Berger. *Indus. Rel.*, Feb. 1962, pp. 1-45.

Related Disciplines

HODGES, D. C. Cynicism in the labor movement. *Am. Jour. Econ. Soc.*, Jan. 1962, pp. 29-36.

NOTES

A nominating committee consisting of Theodore W. Schultz, chairman, Dorothy C. Bacon, Richard E. Caves, Rendigs Fels, Douglass C. North and Robert Solow have submitted the following slate of nominees for 1963 officers of the American Economic Association.

President:

Gottfried Haberler

President-Elect:

George J. Stigler

Vice President:

Gardner Ackley

Abba P. Lerner

Jacob Marschak

Tibor Scitovsky

Executive Committee:

William J. Baumol

Evsey D. Domar

Richard B. Goode

William C. Hood

Representative, Social Science Research Council:

Franco Modigliani

Representative, American Council of Learned Societies:

Simon S. Kuznets

The annual meeting of the Association will be held in Pittsburgh, Pennsylvania, December 27-29, 1962, with headquarters at the Penn-Sheraton Hotel.

Increase in Rates

At the March 23-24, 1962, meeting of the Executive Committee of the American Economic Association, it was decided to adopt the following rate schedule, effective as of January 1, 1963:

Annual dues	\$ 8.00
Family membership	1.00
Junior (student) membership	4.00
Subscribing membership	10.00
Contributing membership	25.00 or more
Subscription to the <i>American Economic Review</i>	8.00

The members of the Executive Committee felt this action was necessary to enable the Association to continue present services to its members and to meet rising publishing costs of the *American Economic Review* and a new edition of the *Handbook*. It should be noted that membership dues and subscription rates have not been changed since 1950. The present schedule of rates is well below that of most other professional organizations.

HAROLD F. WILLIAMSON
Secretary

The One-in-a-Thousand Population Census Sample

The Bureau of the Census is planning to make available on a cost basis reels of magnetic tape or a set of punchcards containing the separate records of the population characteristics of each of approximately 180,000 persons, comprising a one-tenth-of-one-percent sample of the population of the United States. The information contained on the record will comprise substantially all of the characteristics of the persons as enumerated in the 25-percent sample portion of the decennial population census of 1960. Records also will be made available as a set of 180,000, 80-column punchcards. It is anticipated that these materials will be available during the latter part of 1962. The cost to each subscriber will depend upon the number of subscriptions. It is expected that the cost will be between \$4,000-\$7,000 each. Further information concerning this sample may be obtained by addressing an inquiry to the Director, Bureau of the Census, Washington 25, D.C.

New Publication

Announcement has been made of the forthcoming publication of a journal for foreign agriculture, *Zeitschrift für ausländische Landwirtschaft* under the editorship of Otto Schiller and Hans Wilbrandt in collaboration with the German Agricultural Society (DLG) in Frankfurt/Main. There will be a concentration on the role of agriculture in developing countries covering a wide range of agricultural and land problems in their socio-economic context. The journal will be published three times a year. It will be in German with summaries in English, French and Spanish. Communications about the journal should be addressed to the editorial office, Berlin-Dahlem, Podbielskiallee 64.

Deaths

- Bonnar Brown, Stanford Research Institute, May 11, 1961.
 Robert L. Carey, Columbia University, December 31, 1961.
 William J. Coyne, Chevy Chase, Maryland, October 8, 1961.
 Leonard Drake, Philadelphia, Pennsylvania.
 Floyd B. Haworth, emeritus professor, January 27, 1962 in Fresno, California.
 George B. Hill, Van Nuys, California, February 19, 1961.
 David Ivor, University of Western Ontario, London, Ontario.
 Julius Klein, Washington, D.C., June 1961.
 Harlan L. McCracken, Baton Rouge, Louisiana, July 1, 1961.
 Leo K. Mayer, Manhasset, L. I., New York.
 Paul J. Meier, University of Massachusetts, February 7, 1962.
 John E. Orchard, emeritus professor, Columbia University Graduate School of Business, January 28, 1962.
 Howard W. Saisslin, Denver, Colorado.
 Stefan Stykolt, University of Toronto, February 13, 1962.
 Michael T. Wermel, dean of the College of Business Administration, University of Hawaii, February 6, 1962.
 Virgile Wilhite, University of Oklahoma, January 27, 1962.

Retirements

- John Ewing, former chief, International Activities Division, U.S. Bureau of Employers Security, now consultant to the Bureau.
 E. E. Hale, University of Texas.
 Elmo P. Hohman, Northwestern University.
 Ichiro Nakayama, as emeritus professor, Hitotsubashi University.
 Richard M. Snyder, University of Miami School of Business Administration.

Paul S. Taylor, University of California, Berkeley.

Carroll S. White, U.S. Internal Revenue Service, October 1958.

Visiting Foreign Scholars

Leo H. Klaassen, Netherlands School of Economics, Rotterdam: visiting professor, Graduate School of Business Administration, University of California, Los Angeles, 1962.

Staffan B. Linder, Stockholm School of Economics: visiting associate professor, Columbia University, 1962-63.

Promotions

Robert E. Baldwin: professor of economics, University of California, Los Angeles.

Jacob Birnberg: assistant professor of accounting, Graduate School of Business, University of Chicago.

Morris Bornstein: associate professor of economics, University of Michigan.

Paul G. Craig: professor, department of economics, Ohio State University.

John Dearden: associate professor of business administration, Harvard University Graduate School of Business Administration.

Marion H. Gillim: professor of economics, Barnard College, Columbia University.

Frank H. Golay: professor of economics, Cornell University.

Jack Hirschleifer: professor of economics, University of California, Los Angeles.

John B. Lansing: professor of economics, University of Michigan.

Harvey J. Levin: professor of economics, Hofstra College.

Robert Lindsay: senior economist, Federal Reserve Bank of New York.

Arthur D. Lynn: professor of economics and assistant dean, College of Commerce and Administration, Ohio State University.

Martin V. Marshall: professor of business administration, Harvard University Graduate School of Business Administration.

Ilse Mintz: associate professor of economics, Columbia University.

J. Russell Nelson: assistant professor of finance, University of Minnesota.

Clinton V. Oster: professor, department of economics, Ohio State University.

Stephen W. Rousseas: associate professor of economics, Cornell University.

Warren J. Samuels: associate professor of economics, University of Miami School of Business Administration.

Irving Schweiger: professor of marketing, Graduate School of Business, University of Chicago.

Stanley J. Shapiro: assistant professor of marketing, Wharton School of Finance and Commerce, University of Pennsylvania.

Charles W. Skinner: associate professor of business administration, Harvard University Graduate School of Business Administration.

Leon Smolinski: associate professor of economics, Boston College.

Arthur N. Turner: associate professor of business administration, Harvard University Graduate School of Business Administration.

Paul A. Vatter: associate professor of business administration, Harvard University Graduate School of Business Administration.

Harry J. Wheaton: associate professor, School of Business Administration, The American University.

Stephen T. Worland: associate professor, department of economics, University of Notre Dame.

Administrative Appointments

Vernon R. Alden: president, Ohio University.

A. V. Berger-Voesendorf: chief, economic analysis, U.S. Army Corps of Engineers, Portland, Oregon.

Blanche Bernstein: officer in charge, Social Affairs, Office of International Economic and Social Affairs, International Organization, U.S. Department of State.

W. Donald Bowles: associate professor and chairman of the department of economics, American University.

Arthur Bronwell: dean of engineering, University of Connecticut.

Alpha C. Chiang: chairman, department of economics, Denison University.

Benjamin Chinitz: chairman and professor, department of economics, University of Pittsburgh.

Walter H. Delaplane: vice president for academic affairs, University of Arizona.

William Haber: chairman, department of economics, University of Michigan.

John Hein: chief, foreign research division, research department, Federal Reserve Bank of New York.

Werner Z. Hirsch: director, Institute for Urban and Regional Studies, Washington University.

Walter E. Hoadley: chairman of the board of the Federal Reserve Bank of Philadelphia.

Dick Leabo: associate dean, University of Michigan Graduate School of Business Administration.

Robert Lekachman: chairman, department of economics, Barnard College, Columbia University.

William H. Miernyk: professor of economics and director of the Bureau of Economic Research, University of Colorado.

G. Warren Nutter: chairman, department of economics, University of Virginia.

Alan T. Peacock: chairman and first professor of economics at newly created University of York, England.

A. Peter Ruderman: economic and reports officer in charge of the Evaluation and Reports Office, Pan American Sanitary Bureau.

A. E. Safarian: professor of economics and chairman, department of economics and political science, University of Saskatchewan.

G. R. Simonson: chairman, department of economics, Long Beach State College.

Harry W. Zimmermann: director, List Institute, Basle, Switzerland.

Appointments

Elliott L. Atamian: associate professor of finance, University of Miami School of Business Administration.

Edward C. Atwood, Jr.: professor of economics, School of Commerce and Administration, Washington and Lee University.

Jarvis M. Babcock: assistant professor of economics, University of Michigan.

Ralph E. Beals: assistant professor of economics, Amherst College.

Arthur Benavie: assistant professor of economics, Princeton University.

James P. Bennett: instructor in economics, University of Michigan.

Gerald O. Bierwag: instructor, University of Oregon.

Michael D. Bird: instructor in economics, University of Michigan.

J. O. Blackburn: assistant professor, department of economics and business administration, Duke University.

Jack Blinksilver: visiting lecturer on business administration, Harvard University Graduate School of Business Administration.

John Bottum: assistant professor, department of agricultural economics, Ohio State University.

Henry J. Bruton: associate professor, department of economics, Williams College.

Leland S. Burns: assistant professor, Graduate School of Business Administration, University of California, Los Angeles.

Jerome B. Cohen: visiting professor of economics, Columbia University, fall term 1962-63.

Frank S. Conklin: instructor, department of economics, Iowa State University.

John H. Dales: Ford Foundation visiting professor of economics, University of Chicago.

Kenneth L. Deavers: economist, RAND Corporation.

Barney Dowdle: assistant professor, University of Washington.

Alvar O. Elbing, Jr., University of Washington: assistant professor of business administration, Amos Tuck School of Business Administration, Dartmouth College.

Douglas H. Eldridge, Treasury Department: John C. Lincoln professor of public finance, Claremont Men's College.

Tibor Fabian: adjunct associate professor of industry, University of Pennsylvania.

John N. Fry, University of Houston: economics division of the Operations Evaluation Group, Massachusetts Institute of Technology.

Herbert Geyer: associate professor of economics, Southern Methodist University.

William L. Gladstone: lecturer in accounting, Columbia University Graduate School of Business.

Lyle E. Gramley, Federal Reserve Bank of Kansas City: associate professor of economics, University of Maryland.

Robert K. Greenleaf: visiting lecturer on business administration, Harvard University Graduate School of Business Administration.

Albert Haring: professor of marketing, School of Business, Indiana University.

Harmon H. Haymes: assistant professor of economics, School of Commerce and Administration, Washington and Lee University.

James A. Henning: visiting assistant professor of economics, Cornell University.

Robinson G. Hollister, Jr.: assistant professor, department of economics, Williams College.

M. Bruce Johnson, Northwestern University: assistant professor, University of Washington.

Shirley B. Johnson: lecturer in economics, Barnard College, Columbia University.

Chandra K. Johri: instructor in economics, University of Michigan.

Curtis H. Jones: lecturer on business administration, Harvard University Graduate School of Business Administration.

Dale W. Jorgenson: Ford Foundation visiting professor of economics, University of Chicago.

Arnold Katz: assistant professor of economics, Columbia University.

Jean St.G. Kerr: visiting lecturer in accounting, Columbia University Graduate School of Business.

Joseph A. Kershaw: department of economics, Williams College.

Robert W. Kilpatrick: assistant professor of economics, Cornell University.

Malcolm H. Liggett: instructor in economics, Cornell University.

Robert Livernash: Ford Foundation visiting professor of industrial relations, Graduate School of Business, University of Chicago.

Adolph Lowe: Alvin Johnson chair in economics, The New School for Social Research.

David MacEachron: program associate, Near East and Africa Program of the Ford Foundation.

Matityahu Marcus: assistant professor of economics, University of Pittsburgh.

Daniel McFadden: postdoctoral Mellon Fellow, University of Pittsburgh.

John S. McGee, University of Chicago: professor, department of economics and business administration, Duke University.

John F. Mee: Mead Johnson professor in management, School of Business, Indiana University, second semester 1961-62.

Charles T. Moore: assistant professor of marketing, School of Commerce and Business Administration, University of Alabama.

J. Carter Murphy: professor of economics, Southern Methodist University.

Chiaki Nishiyama: associate professor in economics, Division of Social Relations, Rikkyo (or St. Paul's University), Tokyo.

Fredrick S. O'Brien: assistant professor, department of economics, Williams College.

Goran Ohlin, Columbia University: Institute of International Economics, University of Stockholm.

Richard Phillips, Iowa State University: Agri Research, Inc., Manhattan, Kansas.

John A. Pincus: economist, RAND Corporation.

William Pollak: instructor in economics, Oberlin College.

Clara E. Raup: visiting professor of economics, Southern Illinois University, spring quarter.

Edwin P. Reubens: visiting professor of economics, Columbia University.

Emmett J. Rice, Cornell University: Federal Reserve Bank of New York.

Roderick H. Riley: assistant and economic advisor to the Commissioner of Indian Affairs, Department of the Interior.

Ercole Rosa: lecturer in business, Columbia University Graduate School of Business.

Gerhard Rosegger: assistant professor of economics and associate director, Economics-in-Action Program, Case Institute of Technology.

Philip Ross: assistant professor of economics, University of Pittsburgh.

T. Donald Rucker: economist, Michigan Medical Service.

Frank Ryerson: associate professor of marketing, University of Alabama School of Commerce and Business Administration.

Leonard G. Schiffrin: instructor in economics, University of Michigan.

Charles E. Seigman: instructor in economics, Swarthmore College.

Jati K. Sengupta: research associate, department of economics, Iowa State University.

Eli Shapiro: professor of finance, Harvard University Graduate School of Business Administration.

Stanley J. Sigel, Federal Reserve System: now on temporary assignment as director, Statistics and National Accounts, Organization of Economic Cooperation and Development in Paris.

Anthony Solomon: lecturer in business administration, Harvard University Graduate School of Business Administration.

Frederick T. Sparrow: assistant professor, department of political economy, Johns Hopkins University.

Frank G. Steindl: assistant professor of economics, Oklahoma State University.

Norman Sun: visiting professor of economics, Swarthmore College.

Ronald L. Teigen: assistant professor of economics, University of Michigan.

Paul T. Therikildsen: assistant professor of economics, University of New Mexico.

Proctor Thomson: John C. Lincoln professor of economics and administration, Claremont Men's College.

Gerhard Tintner, Iowa State University: professor of economics and mathematics, University of Pittsburgh.

Harry M. Trebing, University of Nebraska: associate professor, Indiana University.

Bernard Udis: associate professor of economics, University of New Mexico.

William H. Wallace: assistant professor, department of economics and business administration, Duke University.

Paul A. Weinstein: assistant professor of economics, Columbia University.

William S. Westbrook: assistant professor of economics, Denison University.

Marina Whitman: lecturer in economics, University of Pittsburgh.

William Whittington: professor of accounting, University of Alabama School of Commerce and Business Administration.

Harold Wolozin: associate professor of economics, American University.

Paul Wonnacott: associate professor of economics, University of Maryland.

Kozo Yamamura: instructor, San Diego State College.

Leland B. Yeager: visiting professor of economics, Southern Methodist University, spring semester 1962.

Leaves for Special Appointments

Michael Albery, Boston College: economic advisor to the government of Paraguay on behalf of the United Nations.

Harry B. Crewson, Ohio University: professor, department of economics, University of Hawaii, second semester, 1961-62.

R. Kirby Davidson: not with Rockefeller Foundation as reported in last issue; is visiting professor at Makerere College, Kampala, Uganda, sponsored by the Rockefeller Foundation.

W. F. Dillingham, Florida State University: lecturer, Universities of Madrid and Barcelona, Spain.

Edgar S. Dunn, Jr., University of Florida: to organize the Office of Economic Programming in the U.S. Department of Commerce.

Frederick H. Harbison, Princeton University: Center for Advanced Study in the Behavioral Sciences, Stanford, California, 1962-63.

Howard H. Hines, Iowa State University: economics program director, National Science Foundation, March 1, 1962 to May 31, 1963.

Leland C. Lehman, Denison University: working with the Committee on the Judiciary, House of Representatives, Washington, D.C., February 1962 to February 1963.

B. C. Lemke, Michigan State University: lecturer at the Istituto Post-Universitario per lo Studio dell'Organizzazione Aziendale, Turin, Italy, March-July, 1962.

Raymond F. Mikesell, University of Oregon: lecturer at South American universities, winter 1962, under the sponsorship of the Office of Cultural Affairs, Department of State.

Richard R. Newberg, Ohio State University: consultant to the Agency for International Development acting as co-ordinator for the Second Latin American Conference on Marketing.

Herbert S. Parnes, Ohio State University: Office for Scientific and Technical Personnel, Organization for European Economic Cooperation, Paris, France.

Nikos G. Photias, School of Business Administration, The American University: lecturer at universities in Greece, Germany and Lebanon, spring 1962.

Robert L. Sandmeyer, Arizona State University: visiting assistant professor of economics, Oklahoma State University.

Daniel B. Suits, University of Michigan: Center for Economic Research, Athens, Greece, 1961-62.

Norman W. Taylor, Lawrence College: visiting assistant professor of economics and history, University of Wisconsin, spring semester, 1962.

Hans B. Thorelli, University of Chicago: visiting professor of business administration, International Center for the Advancement of Management Education, Stanford University, fall, 1962.

Burton A. Weisbrod, Washington University: visiting associate professor, Industrial Relations Section of Princeton University, 1962-63.

Stanislaw H. Wellisz, Graduate School of Business, University of Chicago: to work on a planning project in Calcutta, India, financed by the Ford Foundation.

Resignations

Anthony Downs, University of Chicago.

William D. Hopper, University of Chicago.

Charles M. Tiebout, University of California, Los Angeles.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Labor economists: Department of Labor has openings for work in the fields of wages, manpower, employment, labor and industrial labor conditions and related fields. Salaries range from \$6,435 to \$13,730 depending upon experience and training. To apply, send résumé or Standard Form 57 to the Executive Secretary, Board of U.S. Civil Service Examiners, U.S. Department of Labor, Washington 25, D.C.

Industrial organization, trade regulation, industrial concentration, structure of industry, price behavior: The Antitrust Division of the U.S. Department of Justice has openings for economists in Washington, D.C. Candidates should possess a background of education or experience in above fields. Duties involve the application of economic analysis to the enforcement of the antitrust laws. All positions are within the competitive civil service; entrance salaries range from \$5,355 to \$10,635 per annum. Write: Mr. John W. Adler, Chief, Personnel Office, Department of Justice, Washington 25, D.C.

Agricultural economist: Production economics research; rank and salary determined by education and research but range of \$8,500-\$11,000 possible. Short-term applicants unwanted. Supply information required in Federal Form No. 57. Interested parties apply Director, Land Study Bureau, University of Hawaii, Honolulu 14, Hawaii.

Technical assistant: For its program of technical assistant to the developing countries, the I.L.O. is looking for experts in the formulation and implementation of employment objectives in economic development to be assigned by the I.L.O. to serve as a member either (1) of the staff of a regional economic development institute to be set up in Latin America and later to be set up in Asia and Africa; or (2) of a group of experts advising a government on economic development planning and programming; or a combination of these functions. For details write to the Washington Branch Office, International Labor Office, 917 15th Street, N.W., Washington 5, D.C.

Economics: Assistant professor in economics. New England state college, about 3,700 students. B.A., B.S., and M.A. degrees. Beginning salary \$7,280 for ten months with additional compensation for six weeks summer session. Begin September, 1962.

Economics: Midwestern municipal university has full-time opening for an instructor; must be Ph.D. or near; expected to teach introductory courses plus some advanced undergraduate courses; labor economics background preferred but not essential; specialization and research not as important as good teaching ability; salary, with Ph.D., \$6,000 to \$6,900, depending on background, starting September, 1962.

P252

Business analyst: By a long-range planning group in a large oil producing and marketing organization, with responsibility for developing marketing innovations and planning diversification activities. Position is primarily concerned with the development and analysis of financial, economic, and marketing data as they relate to the profitability of proposed projects. Applicants should be proficient in at least three of the following areas: financial analysis, economic analysis, marketing research and statistical techniques, managerial accounting, and industrial engineering. A proven record of analytical ability is essential. Candidate should have an M.B.A. degree and five years of experience in the areas mentioned above. Salary will be commensurate with demonstrated ability. Covering letter outlining relative experience and current salary should accompany a detailed résumé. All replies will be treated with strictest confidence.

P257

Economics: University teaching appointment in Latin America. Prerequisites: graduate of an accredited college with major in economics and emphasis in the labor field; experience in industry or trade union desirable; prefer applicant working toward advanced degree; native fluency in Spanish; amenable in social situations. Job description: two-year contract on staff of economics department in Latin-American university. Starting salary, \$7,500 to \$8,500, plus allowances, depending upon qualifications. Send résumé.

P258

Economics: Ph.D., or all work completed except thesis, to take charge of area of economics. Rank, associate professor; salary according to education and experience. Write: Dr. T. Hillard Cox, Division of Business Administration and Economics, University of San Diego, San Diego, California.

Regional economics: Ph.D. or M.S. plus four years of research experience. Conduct fundamental and applied research on interdisciplinary problems in fields of regional development and long-range planning. Research on domestic and foreign areas using team approach. Send résumé of education and experience in research to L. G. Hill, Battelle Memorial Institute, 505 King Avenue, Columbus 1, Ohio.

Transportation economics: Ph.D. or M.S. plus four years of research experience. Conduct fundamental and applied research on domestic and foreign problems using interdisciplinary team approach. Send résumé of education and research experience to Battelle Memorial Institute (address above).

Economic planning: Ph.D. or M.S. plus four years of research experience. Conduct fundamental and applied research on area aspects of domestic and foreign problems using interdisciplinary team approach. Send résumé of education and research experience to Battelle Memorial Institute (address above).

Economics: Ph.D. with deep interest in economic research. Position involves analysis of interrelationships between technical developments and the economic environment. The effort includes fundamental research in economics, macroeconomic analysis as an input to long-range planning, and interdisciplinary studies of the sociopolitical implications of the economic impact of changing technology. The ability to communicate in an interdisciplinary atmosphere is essential. Desired detailed résumé of education, experience, and interests (Battelle Memorial Institute; address above).

Economics: Applications are invited for a Lectureship or Senior Lectureship in Economics at the University of New England, Australia. Post involves undergraduate teaching in economic theory and/or money and banking, and research in fields of appointee's own interest. The normal teaching load is about four class hours per week. The Department is of moderate size, at present 12 faculty members. Salary scale for Senior Lecturer: £A2,597 by £A95 to £A3,047; for Lecturer: £A1,777 by £A105 to

£A2,482. Status and initial salary according to qualifications and experience. Fare to Australia paid for appointee, wife, and children, plus a baggage allowance. Appointment may be permanent or for three years. In the latter case, £A400 will be paid toward return fares. Further information obtainable from Professor of Economics, University of New England, Armidale, N.S.W., Australia.

Economist: To assess and evaluate economic programs, offer consultative services and recommend economical goals for the state of Hawaii government. Requires Ph.D. in economics and at least 5 years of professional experience as research director, consultant or economist. Salary: \$11,064 to \$14,112. Contact: Department of Personnel Services, 825 Mililani Street, Honolulu, Hawaii.

Economist: Ph.D. qualified in micro theory and national income. Must also be willing to teach principles. Classes under 40. Excellent retirement and disability program. Salary: \$8,460 for qualified Ph.D. with some experience; \$7,200 for M.A. with substantial progress toward Ph.D. and some experience. Salaries quoted are for nine months. Permanent, beginning September, 1962. Send application to: Dr. H. F. Heller, Vice-President, Eastern Illinois University, Charleston, Illinois.

Economics: West Liberty State College, West Liberty, West Virginia, has a vacancy for an economics teacher. Should be able to teach all economic courses from principles to comparative. M.A. required; Ph.D. preferred. Rank and salary dependent upon qualifications and experience. Liberal fringe benefits, congenial atmosphere. Salary scale available upon request.

Economics and business administration: Opening for (1) a man with Ph.D. in economics; specialization in one or two of the following fields: labor, economic history, economic thought; (2) a man with an advanced degree in business administration. Teaching and business experience preferred. Rank and salary according to education and experience. Pension, group life, and medical plans. Appointments tenable from September 1, 1962. Please submit complete résumé including salary. Write: Francis J. Hayes, Economics Department, Loyola College, Montreal, Canada.

Marketing consultant: American foundation offers assignment, minimum of two years, in India. At least 15 years of experience in both business and teaching essential. Candidate must be a recognized authority in marketing and be familiar with international research in this field. Position requires ability to conduct seminars in marketing subjects, prepare course material and case studies, conduct field investigations and undertake marketing research studies. Salary range from \$12,000 to \$18,000 depending on qualifications. Furnished housing, auto, transportation, insurance, retirement and other benefits for employee and family also provided. Candidates will be interviewed in June and must be available prior to November, 1962. P259

Economists Available for Positions

Marketing, statistics, business and industrial economics: Man, 40, married; B.A., M.A., Ph.D. credits completed. Fourteen years of experience in designing and conducting economic and market research projects; contributor of articles to various publications. Seeks research position with business or industry. E1005

Economics, finance: Man, 43; doctorate degree. Twelve years of college and university teaching experience. Desires to relocate in a university or college beginning in September, 1962. Some advanced study possibilities in related fields are desired, which essentially constitute the reason for a contemplated change. E1017

Economic theory, international economics, development: Man, 41, married; Ph.D. from distinguished midwestern university. Ten years of teaching experience in a variety of branches and on all levels of economics; some government (federal) experience. Credentials and personal interview available on request. Desires to relocate in order to concentrate on all or part of above; however, also interested in related fields. Available summer or fall, 1962. E1018

Principles of economics, economic thought, real estate, business law, insurance: Man, 40, married; Ph.D. Fourteen years of successful college experience; 6 years in academic administration, including department head. Will consider university teaching or head of a department if position represents an advancement. Especially prefers instruction. E1023

Economic theory, international economics, agricultural economics: Man, in early 40's; M.A. in Economics. Fluent French; working knowledge of German and Italian. Desires teaching and/or research position. E1031

Economic theory, history of economic thought, industrial organization, government and business, economic development: Man, 46; Ph.D. Now engaged as economic and marketing consultant. Has had 12 years of teaching experience; 10 years consultation in government and international agencies. Seeks opportunity to teach advanced university courses. Expects appointment of at least associate professorship rank and salary of \$9,500. E1040

Economic theory, statistics, labor economics, industrial organization, international economics: Man, 38, married; currently writing dissertation in industrial organization. Fellowship recipient. Available in June, 1962. E1041

Business research: Man, married; Ph.D. Seeks responsible, challenging position in formulation of management information requirements, computer applications to business, performance evaluation, forecasting, long- and short-range planning, and action recommendations. Compensation according to responsibility. E1044

Principles, theory, money and banking, labor economics, international economics, economic thought: Man; completing Ph.D. course requirements. Extensive research background; presently lecturer in economics. Desires teaching and research opportunity in eastern or midwestern school. Available in September, 1962. E1047

Money and banking, business finance, investments, capital markets, economic principles and theory: Man, 35, married; M.A. (economics), will graduate with Ph.D. (business administration). Five years in cost accounting and procedure writing with major firm; 4 years of teaching business, economics, and accounting. Seeks teaching, research, or administrative position with university, business, private organization, or government. E1051

Economic theory, international economics, history of economic thought, labor economics, money and banking, comparative economic systems, economic development, economic fluctuations, public finance, industrial organization, economic history: Man 46; M.A., Ph.D. Years of teaching experience, including graduate teaching; Ford Foundation grant. Now on university faculty. Desires teaching position with a progressive institution. E1052

Business and industrial economics, forecasting, marketing, industrial organization, corporate planning, finance and investments: Man, 29; M.S., all requirements for Ph.D. completed except dissertation. Contributor of articles to publications, public speaking: 5 years of professional experience, including 1 as head of consulting firm; presently a corporate economist with responsibility for long-range planning. E1053

International economics, underdeveloped areas, particularly Latin American and Middle East, economic development, world regional blocs, international financial organizations: Man, 45, married; M.A., Ph.D. Experienced in government research: 10 years of teaching experience; wide experience in undergraduate courses. Presently teaching in large midwestern university. Available either in June or September, 1962 E1057

Public finance, money and banking, international economics, business cycles, economic policy, history of economic thought, economic theory, statistics: Man, 48, married; graduate European school of economics. Ten years of teaching experience in Europe. Several years of part-time teaching at well-known West Coast university. Desires full-time teaching position. Available in September, 1962. E1063

International finance, economic development, public finance, monetary and fiscal policy: Man, 33; M.A., Ph.D. requirements except dissertation substantially completed. Fellowships; languages; area concentration Western Europe and Southeast Asia. Four years of research experience in government and research organization. Seeks research position. Willing to relocate. E1064

Economic theory, economic history, economic geography: Man; B.S., M.B.A., requirements for Ph.D. completed except for dissertation. Six years of teaching experience; also business experience. Fellowship recipient. Desires teaching position on the East Coast. Available in fall of 1962 or 1963. E1066

Mathematical economics and statistics, econometrics, O.R. mathematics, industrial management, micro-macroeconomic analysis, business cycles, economic thought, economic development of Mainland China and postwar Japan: Man, 38, married; Chinese-born and undergraduate-educated; graduate studies entirely in Japan since 1944; doctoral dissertation in process. Nearly 15 years of teaching experience in extensive fields, including graduate work; qualified college teacher authorized by Japan Ministry of Education; served as head of department and acting chairman of graduate course; presently director of a small private research institution and consultant. Excellent Japanese and Chinese; speaks English, French and reads Russian, German, Italian, and Spanish; publications. Seeks permanent and responsible teaching/research staff position in U.S. but will consider any other Western country; expects appointment of at least associate professorship rank but not serious about salary if only a promising and challenging academic atmosphere with an excellent library available and agrees willingly to whatever obligations. E1067

International economics, trade and finance, economic statistics and forecasting, business cycles and economic theory: Man, 53; Ph.D. Wide experience in teaching and research in above fields. Serving as program economist in US/AID missions in the Middle East and South America during the past 3 years. Served as a full professor in a ranking institution of higher learning in the previous 16 years. Previous experience as senior economist in the U.S. government in Washington, D.C., for 5 years. Seeks a permanent position teaching and/or planning and direction of business and economic research in a university or college. Available in September, 1962. E1068

Principles, money and banking, public finance, labor economics, consumer economics, elementary statistics: Man, 31, married; M.A., 2 years of additional graduate work. Two years of full-time teaching experience. Prefers a teaching position near a graduate school. E1069

Long-range planning, special studies, forecasting, regional economics: Man, 34, married; B.A., M.A. Experience includes general business administration and sales, government budget analysis and consultant to legislative committees, company long-range plan formulation and administration, short- and long-run forecasting. Presently corporate economist. Seeks position in a growing business or research organization. E1070

Economic theory, public finance, American economic development, mathematical economics, statistics, and principles: Man, 36, married; B.A., M.A., Ph.D. summer of 1962. Four and a half years of teaching experience in liberal arts college; 1 year government research; and fellowship recipient. Desires a teaching position. Available in September, 1962. E1071

Principles, economic theory, international economics and monetary policy, economics of underdeveloped countries, business cycles and economics of growth, comparative economic systems: Man, 39, married; M.S., Columbia University, cand. Ph.D., University of Geneva; all requirements for Ph.D. completed except publication of dissertation (publication by major firm expected in 1962). Six years of successful teaching at large state university; Ford Foundation Fellow in Economics and numerous other research awards; many academic honors, including decoration by foreign government; author of 2 books, many articles; finest references. Desires teaching position with opportunity for research at rank and salary commensurate with experience. E1072

Banking and finance, principles of economics, investments, economic development and growth, economic history, business forecasting: Man, 26; B.A., expecting M.B.A. in June, 1962. Thesis topic: "Do the U.S. Unemployment Statistics Reliably Measure Unemployment?" Three years of experience as a credit analyst for a large New York City bank. Seeks first teaching position. Salary open. Available in September, 1962. E1073

Economic development, resource economics, regional economics, international trade, economic history: Man, 41, married; Ph.D. Eight years of teaching experience; 4 years administering economic program; 2 years of study abroad; publications. Desires position with liberal arts college or university. Available in September, 1962, or June, 1963. E1074

Marketing, statistics, economic analysis, money and banking, international economics, public finance, history of economic thought: Man, married; Ph.D. dissertation in process. Nearly 15 years of responsible professional experience in directing and conducting economic and marketing research for management. Fellowship; university teaching. Seeks teaching or business position. E1075

Economic principles, intermediate theory, public finance: Man, 44; Ph.D. course work nearly completed at large midwestern university. Ten years of college teaching experience; previous business experience. Present salary \$7,500 for nine months. Would like location in western part of country at similar salary. E1076

Managerial economics, forecasting, business cycles, management, marketing, economic theory, industrial organization and regulation, quantitative methods, principles: Man, 36, married; Ph.D. (Ivy League). Publications include a number of well-known books, journal articles, and monographs in most of the above areas as well as in accounting and finance. Twelve years in teaching and high-level advisory work with domestic and foreign governments and corporations. Listed in various *Who's Who* and similar biographical directories. Broad teaching and research interests in many areas of economics and business, as evidenced by past teaching and publications record. Currently in senior position with tenure at large university but desires change for personal reasons. Would be genuinely interested in considering small or large school, undergraduate or graduate, and some combination of teaching, research, and/or administration. Would also be interested in position of department chairman, assistant dean, or dean. Salary approximately \$12,000 for academic year, plus opportunity for summer income. E1077

Economics, business: Man, 37; B.S., M.B.A., University of California at Berkeley, Ph.D., University of Illinois. One year of teaching experience in a southern college. Desires a more challenging position in economics, marketing, or finance. Available in June or September, 1962. E1078

Agricultural economics, economic theory: Man, 32, married; M.S. Six years of market research experience, southern university. Desires job with business or industry. Will relocate. E1079

Latin-American economics: Man, 23; B.B.A., M.A. in Economics. Latin-American national. Desires teaching and/or research position in Latin America or relating to Latin America. Résumé available. Available in July, 1962. E1080

Economics, public finance, regional economics, research: Man, 30, married; Ph.D. Research, administrative, and editorial experience; publications. Presently on faculty of large midwestern university. Seeks business or academic research position in West. E1081

Business and industrial economics, forecasting, money and banking, corporate planning, finance and investments: Man, 29; M.B.A. Five years of professional experience; presently a corporate economist with responsibility for short-term planning. Seeks teaching, research, or administrative position with university, business, private organization or government. E1082

Business research, managerial economics, forecasting: Man, 36; B.A., M.A., completing Ph.D. Ten years as economist with major corporations plus some university teaching. Available for part-time consulting and/or economic research (New York City area). E1083

Money and banking, history of economic thought, international trade and finance, comparative economic systems: Man, 40, married; Ph.D. from distinguished European school. Thirteen years of teaching experience in midwestern and Rocky Mountain universities; special experience in banking; textbook on the evolution of economic thought nearing completion. Credentials and personal interview available on request. Available in fall, 1962. E1084

Labor economics (all phases), personnel and industrial management, principles of management, money and banking, statistics, principles of economics: Man, 48, married; M.A., Ph.D. expected in August, 1962. Thirteen years of college and university teaching; 9 years of personnel work in industry and government. Midwest only. Available in September, 1962. E1085

Public finance, money and banking, principles, economic thought, government and business: Man, 42; Ph.D. from distinguished midwestern university. Nine years of college teaching experience. Research experience with Federal Reserve System and state government. Learned journal publications. Desires teaching position in university or quality college with research opportunity. E1086

Principles, economic theory, monetary theory, business cycles and forecasting, labor: Man, 28, married, completing Ph.D. course work in June, 1962. Desires teaching position in a college or university in the West or Northwest. Available in June, 1962. Robert L. Peterson, P.O. Box 823, College Station, Washington State University, Pullman, Washington.

L'INDUSTRIA

Review of Political Economy

Editor: Ferdinando di Fenizio

Summary of Issue n. 1/1962

G. MORTARA	Demographic Expansion and Poverty in Latin America
A. PREDETTI	The Preference Function, as a Convergence of a Positive with a Normative Economic Model
M. G. KENDALL	New Prospects in Economic Analysis
N. JASNY	The Soviet Balance of National Income and the American Input-output Analysis
G. DELLA PORTA	Sources of Information for Regional Programming in Italy
G. BRAGA	Control of Economic Equilibrium Pragmatic Models
<i>f.d.f.</i>	Favorable Business Outlook—The Government Budget for Fiscal Year 1962-1963—The Lira Helps the Dollar—Economic Planning in the Sixties—Strengthening the International Monetary Fund

Each number contains Summaries in English of the original articles—Annual subscription rate for Abroad: Lit. 6.000=, Anyone interested may send for a sample copy.

Editorial and Administrative Offices: Via Farneti, 8—Milano (Italy)

INTERNATIONAL ECONOMIC PAPERS

No. 10, 1960

Translations prepared for the International Economic Association

CONTENTS

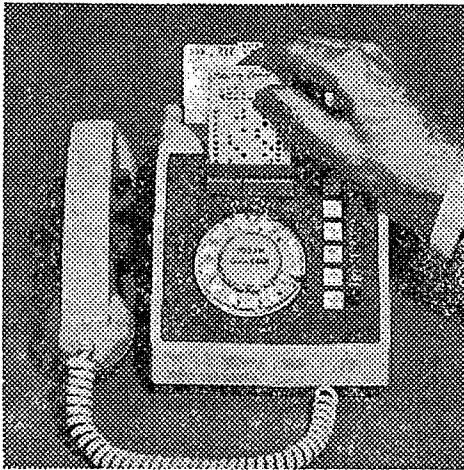
Preface

Tax Principles and Tax Policy	
<i>Ekonomi Politik Samballe</i> , 1959	Erik Lindahl
Price Stability, Economic Growth and Income Distribution	
<i>Schweizerische Zeitschrift für Volkswirtschaft und Statistik</i> , 1959	Gottfried Bombach
International Inequalities and General Criteria for Development Aid	
<i>De Economist</i> , 1953	H. Theil
Note on the Cost of Railway Transport	
<i>Annales des Ponts et Chaussées</i> , 1886	W. Nordling
Marginal Utility	
<i>Handwörterbuch der Staatswissenschaften</i> , 1927	Paul Rosenstein-Rodan
Inflation in Chile: An Unorthodox Approach	
<i>El Trimestre Económico</i> , 1958	Osvaldo Sunkel
The Stockholm School versus the Quantity Theory	
<i>Ekonomisk Tidskrift</i> , 1943	Bertil Ohlin
The Role of Amortization in Investment Programming	
<i>Revue de Recherche Opérationnelle</i> , 1957	Maurice Boiteux
Some Problems of Price Formation in a Socialist Economy	
<i>Voprosy Ekonomiki</i> , 1957	Y. Malishev
Frederik Zeuthen	
<i>Nationalökonomisk Tidskrift</i> , 1959	Hans Brems
Classified Index of I.E.P., Volumes 1-10	

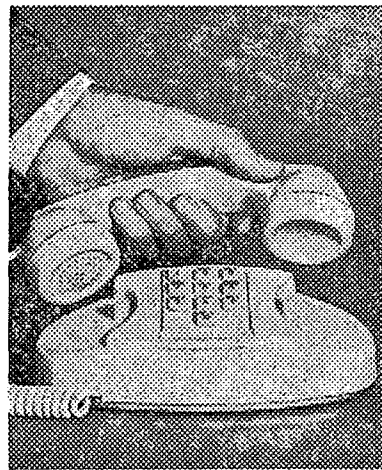
London
Macmillan & Co. Ltd.

New York
The Macmillan Company

A special price of \$3.80 net, plus 12 cents postage, has been arranged in co-operation with The Macmillan Company for members of the American Economic Association. Purchases at the special rate may be made by placing an order with Dr. James Washington Bell, Secretary, American Economic Association, Northwestern University. A covering check, made out to The Macmillan Company, must accompany the order.

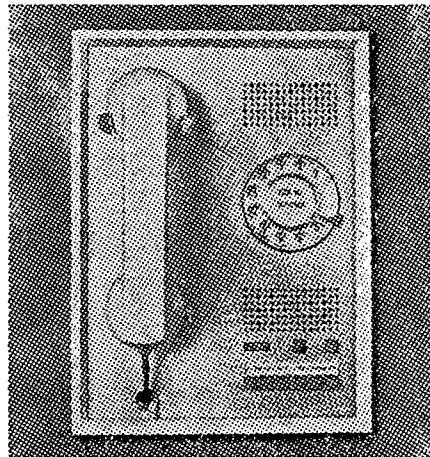


CARD DIALER TELEPHONE



TOUCH TONE PRINCESS TELEPHONE

There Is No End to Telephone Progress



PANEL TELEPHONE

Here are some of the new telephone instruments in various stages of development. Some are still experimental. Others are undergoing further work or being tested in use. They are symbols of other exciting things to come . . . to make your communication services even more attractive, useful and convenient.

This business has lived and grown successful by giving service.

It has done its best to give the public what it wanted, when it wanted it, with efficiency and courtesy. And then invented better things.

In the future, as in the past, the greatest progress will come through the combination of research, manu-

facture and operations in one organization, with close teamwork between all three . . . Bell Telephone Laboratories, Western Electric and the associated Bell telephone companies.

Wherever the trail may lead, on the earth or beneath the seas, in the air or through space, we will be trying very hard to serve you well.



BELL TELEPHONE SYSTEM

Owned by more than two million Americans

ECONOMIC DEVELOPMENT IN PERSPECTIVE

By John Kenneth Galbraith. Knowing that new states and old states alike now recognize economic development as an imperative, Mr. Galbraith, United States Ambassador to India, delivered in late 1961 five public lectures on the essentials of the process. He felt that in the world-wide enthusiasm for economic minutiae there was a danger of mistaking parts of the problem for the whole. This book is the outgrowth of these talks. There is a wealth of clear sense here for the use of all countries, from those farthest along the road of economic development to those still at the beginning.

\$2.50

PRICES AND PRODUCTION OF MACHINERY IN THE SOVIET UNION, 1928-1958

By Richard Moorsteen. This study provides the key quantitative indicators for 30 years of Soviet experience in developing machinery production: indexes of changes in price levels, of changes in output, and of the supply machinery for purposes of capital construction. The raw data and particulars of the calculations are reproduced in their entirety in eight appendixes; the volume contains 124 tables, a bibliography and a systematic index. *A RAND Corporation Study*

\$15.00

GERMANY AND THE DIPLOMACY OF THE FINANCIAL CRISIS, 1931

By Edward W. Bennett. Documentation now available makes possible the first full investigation of the 1931 European crisis, the only one between the wars in which the United States took a leading role. Brüning's foreign policy is clarified, and the author shows how Germany sought to exploit her private debt to Wall Street, and how the Bank of England's Governor opposed French diplomacy.

\$7.50

THE GOSPEL OF WEALTH AND OTHER TIMELY ESSAYS

By Andrew Carnegie, edited by Edward C. Kirkland. Issued in 1900, Carnegie's essays illustrated the progressive businessman's concern with international affairs and American imperialism. His book provided perhaps the most influential social-economic justification for American capitalistic philanthropy.

\$4.50



Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

A HISTORY OF THE BRITISH STEEL INDUSTRY

By J. C. Carr and Walter Taplin. This book presents changing industrial conditions in Britain and their contributory factors clearly and authoritatively. Included is a comprehensive account of the steel industry in Europe and the United States, providing a full background for the competitive and international aspects of the British industry. \$11.00

COLLECTIVE BARGAINING IN SWEDEN

By T. L. Johnston. No other book offers so thorough an analysis of the model European 'welfare state'. The first systematic study of Swedish policy for wages under full employment, the first major evaluation of the famous "Saltsjöbad agreements" and of the postwar movements towards industrial democracy. \$7.50

THE ECONOMY OF CYPRUS

By Albert J. Meyer with Simos Vassiliou. Cyprus' smallness, indigenous socio-economic structure, and British legacy—including detailed statistical records—make it a laboratory of Middle Eastern development. The authors have designed this brief analysis for the general reader aware of the importance of Cyprus for Europe, the United Nations, and the Atlantic Alliance. \$3.50

ENTREPRENEURS OF LEBANON

THE ROLE OF THE BUSINESS LEADER IN A DEVELOPING ECONOMY

By Yusif A. Sayigh. This is a striking portrait of the Lebanese business leader—his background, his economic mobility, his approach to policy decisions, his motives, and his reactions to the economic and political environment. Mr. Sayigh examines entrepreneurial theory as it applies to the underdeveloped world, and analyzes the role of the entrepreneur in the process of economic development.

\$4.25



Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Four Essential Books for Economists

GOVERNMENT GUARANTEES TO FOREIGN INVESTORS

A. A. Fatouros

The first comprehensive investigation of the kinds of guarantees offered by the governments of capital-importing and capital-exporting states to foreign investors. Professors Fatouros examines bilateral and multilateral international treaties and agreements between investors and the governments of the countries concerned, emphasizing the assurances of nondiscrimination, arrangements for repatriation of earning and capital, and guarantees of non-expropriation or tax exemption.

Just published

438 pages

\$12.00

THE PANIC OF 1819: Reactions and Policies

Murray N. Rothbard

The story of America's first severe depression and the remedies which were suggested for its control are presented by a noted research economist. Dr. Rothbard discusses the proposals for monetary expansion, the direct measures for debtors' relief, and the controversies over a protective tariff. An important book on a relatively neglected epoch in the economic history of America.

Just published

268 pages

\$6.00

CANALS AND AMERICAN ECONOMIC DEVELOPMENT

Carter Goodrich, H. Jerome Cranmer, Julius Rubin

and Harvey H. Segal

Edited by Carter Goodrich

This study of American canal building during the early nineteenth century is essentially a study of the planning of American economic development.

"... full and comprehensive study of the American canal building program."

Cleveland Press-News

"... a fine addition to the history of early American transportation."

Library Journal

303 pages

\$7.50

EUROPE AT SIXES AND SEVENS: The Common Market, The Free Trade Association and the United States

Emile Benoit

"The issues in this crucial situation are admirably outlined in this analysis..."

Saturday Review Syndicate

"An important book dealing with a subject vital to the relationship between the United States and what signs point to as the emerging United Europe."

Virginia Kirkus Service

275 pages

\$6.00



Columbia University Press

Publishers of The Columbia Encyclopedia

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

TWO IMPORTANT TITLES

PREFACE TO ECONOMETRICS

by Michael J. Brennan, Jr., Brown University

This book provides an introduction to quantitative methods that can be understood by the undergraduate. The text material is as nontechnical as possible within limits of precision and accuracy, especially in the early chapters. Each new subject is introduced gradually to give the student time to digest the new learnings before taking up additional ones. Emphasis is placed on applications of economic theory, quantitative measurement, and tests of correctness of theory. An extensive group of problems is included at the end of each chapter.

BUSINESS CYCLES AND FORECASTING

2nd Edition—By Carl A. Dauten, Washington University

Attention to current trends in education for business is reflected in this revision. This new book provides an analytical presentation of cycle theory, forecasting problems, and policies for economic stability. Alternate business cycle theories are presented without critique. Keynesian theories are analyzed and then used in the description of the cyclical processes. Six new chapters are included in the second edition.

SOUTH-WESTERN PUBLISHING CO.

(Specialists in Business and Economic Education)

Cincinnati 27 New Rochelle, N.Y. Chicago 44 Burlingame, Calif. Dallas 2

MONEY, BANKING, AND MONETARY POLICY

CLIFTON H. KREPS, Jr., *University of North Carolina*

This important new book affords the student a thorough understanding of the national economic significance of monetary and banking policy. Theory is woven throughout in a highly integrated approach to the essential principles of money and banking. Attention is thus focused on the "why" of institutional

processes rather than the "how." The analytical discussion of the history of money and banking development places in true perspective the complex issues of theory and policy. Book contains ample question, problem, and biographical materials. 1962. 607 pp. \$7.50

FUNDAMENTALS OF ECONOMICS

RUBY TURNER MORRIS, *Connecticut College*

Student oriented throughout, this highly readable textbook provides a broad background in economic theory and a detailed description of how the economic order operates. It offers a unified, balanced treatment of microeconomics and macroeconomics, supply and demand, monopoly, and pure competition; practical application of theory is stressed. The anal-

ysis is distinguished for its clarity; important interrelationships, analytical comparisons, historical references, and contemporary applications are emphasized. Hundreds of graphs and charts illustrate and focus the discussion. *Student Workbook and Instructor's Manual available.* 1961. 878 pp. \$7.00

ECONOMIC AND SOCIAL SECURITY—Second Edition

Public and Private Measures Against Economic Insecurity

JOHN G. TURNBULL and C. ARTHUR WILLIAMS, Jr., *both University of Minnesota; and EARL F. CHEIT, University of California, Berkeley*

Designed for students of social insurance and social security, this new book offers a thorough discussion of the various public and private measures for extending economic security. The emphasis is on principles and understanding; abstract discussion of statistical detail is avoided. Following the carefully planned and successful pattern established in the

original volume, the Second Edition retains the use of analytical tools in evaluating the private and social insurances and assistances involved in such problems as old age and death, occupational disability and non-occupational illness, unemployment, and sub-standard working conditions. *2nd Ed.*, 1962. 552 pp. \$8.00

MARKETING—Seventh Edition

THEODORE N. BECKMAN and WILLIAM R. DAVIDSON
—both *The Ohio State University*

This standard textbook provides a broad understanding and appreciation of the complete marketing process, its essential economic functions, and the institutions performing them. Giving proper emphasis to the managerial viewpoint, the Seventh Edition strengthens the social and economic coverage of marketing in all its significant implications. It includes

discussions of physical distribution, the significance of consumer-oriented marketing management, quantitative methods of analysis, and marketing aspects of the behavioral sciences. Ample question and problem material. *Instructor's Supplements available.* 1962. 873 pp., illus. \$8.00

THE RONALD PRESS COMPANY

15 East 26th Street, New York 10, New York

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Central Planning in Poland

by John Michael Montias

This book surveys, analyzes, and appraises the Polish experience with central planning in an institutional framework adapted from the Soviet model. Following a comprehensive introduction to the theory of central planning based on a comparison of administrative planning methods with input-output analysis and linear programming, Mr. Montias describes the postwar development of the economy and the organization of planning during the period of the Six-Year Plan. He devotes separate chapters to the planning of material balances, the programming of investments and long-range plans, and to fiscal and financial policy. The chapter on price formation contains detailed statistical information, some of it hitherto unpublished in Poland, and an exhaustive description of price-setting practice. The last two chapters are given over to the reforms in the management of the economy made by the Gomulka regime after 1956 and to the theoretical debate among Polish economists which formed the background of these institutional changes. Much of the information in the book was gathered from interviews with Polish officials and economists and from research undertaken in Warsaw, Krakow, and Wroclaw from 1956 to 1961 in the course of the author's frequent visits to Poland. *Yale Studies in Economics*, 13.

\$7.50

Economic Change in Rural India

Land Tenure and Reform in Uttar Pradesh, 1800-1955

by Walter C. Neale

A valuable contribution to our understanding of the problems of the underdeveloped countries, this carefully documented study traces the history of land tenure and land reform from 1800 to 1955 in Uttar Pradesh, a constituent state of India. Taking issue with the proponents of land reform as a panacea for poverty, Mr. Neale argues that land reform alone will not solve agricultural problems which stem from the vicious circle of underdevelopment and overpopulation and from attitudes embedded in a socio-religious hierarchy. He finds that the lot of the cultivator in Uttar Pradesh ultimately depends upon the injection of new capital and on the provision of alternative employment, with higher productivity. *Yale Studies in Economics*, 12.

\$7.50

Yale University Press



New Haven and London

Canadian orders:



McGill University Press, Montreal 25



THE STATISTICAL METHOD IN BUSINESS

By **FREDERICK A. EKEBLAD**, *Northwestern University*

The demand for men and women trained in statistics has grown greater with the growth of business education. The trained statistician needs a background in the techniques, the applications, and the philosophy of the statistical method. This book is designed to cover these needs. It is about the method in its applications to the problems of decision making in business. The author stresses the underlying philosophy of the statistical method and relates it to familiar experiences of the reader in addition to relating it to the problems of business.

The statistical method is treated as a unified whole rather than as a collection of miscellaneous techniques. Underlying this treatment is the problem of uncertainty. The role of probability concepts and methods pervades the whole book and is not restricted to a few chapters on sampling. This is accomplished by emphasizing the practicability of utilizing a definition of probability that associates it with the state of knowledge that a person has rather than with a set of abstract events. Randomness of events is associated with our ignorance of events rather than with a state of nature. In this way, it becomes possible to emphasize the techniques a person should use to best utilize the information he has about a situation. This approach also makes it possible to clarify the separate roles played by knowledge and technique in dealing with practical problems.

Important contributions are made in the linking of the traditional ideas of confidence intervals and hypothesis testing with some of the recent developments in decision theory and Bayesian statistics. An attempt is made to place the use of the statistical analysis of numerical data as a tool of problem solving in the larger context of all the sources of knowledge that a person has to aid in solving his problems.

The many problems that are appended to each chapter are designed to stimulate thinking on practical issues rather than as vehicles for routine calculation.

Ready August 1962

Approx. 808 pages

Prob. \$9.00

Reserve your examination copy today.

JOHN WILEY & SONS, Inc.

440 Park Avenue South

New York 16, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



BOOKS

John Wiley & Sons and Longmans, Green of London are pleased to announce that the majority of Longmans' existing and future publications in Economics will now be distributed in the U.S., its Dependencies, and the Philippines by Wiley. The first list of Longmans' titles in Economics includes the following:

THE DEVELOPMENT OF ECONOMIC DOCTRINE

An Introductory Survey

By Sir Alexander Gray, University of Edinburgh

This book is a well-edited history of economic doctrine which is designed to serve as an introduction to the study of economics. The author has chosen to explicate the philosophies and opinions of a small but representative group of economic theorists in order to provide a complete picture of the scope of economic doctrine. The aim of the book is to provide the beginner with a background for the understanding of current economic thought by presenting the mainstream of past ideas which have influenced the economic trends of today. *384 pages. \$2.50.*

A TEXTBOOK OF ECONOMIC THEORY

Second Edition

*By Alfred W. Stonier, University College, London, and
Douglas C. Hague, University of Sheffield*

This book is a systematic, comprehensive introduction to economic theory, giving an outline of the way in which an economic system works. This analysis considers only the most important features of the modern economy. The authors present their material in two parts, the first dealing with price theory and the second with employment theory. The two significant changes in this edition are the rewriting of the first part of the section on Quasi-rent and the enlargement of the discussion of open-market operations. *513 pages. \$4.75.*

Send for your examination copies today.

JOHN WILEY & SONS, Inc.

440 Park Avenue South

New York 16, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

FORD FOUNDATION DISSERTATIONS

Leaders in business education are seriously concerned with improving the quality of research that underlies their field. A strategic step toward this goal is to emphasize the importance of doctoral dissertations of high quality prepared by graduate students in business administration. Another is to encourage able graduate students in the social sciences and fields such as mathematics and statistics to choose for their dissertations problems directly relevant to the practice of business or management.

This competition is intended to provide widespread professional recognition for those students whose doctoral research is not confined to careful description of current business practice but is distinguished by its analytical content and strong theoretical roots in the disciplines underlying the profession of business administration.

The dissertations selected will be published and widely distributed as examples of the best doctoral research being produced. Hopefully these will encourage the writing of other dissertations of equal or greater distinction.

1960-1961 Award Winners:

Portfolio Selection: A Simulation of Trust Investment. By Geoffrey P. E. Clarkson, School of Industrial Management, Massachusetts Institute of Technology

Financing and Initial Operations of New Firms. By George William Summers, College of Business Administration, Arizona State University

The Investment Decision Under Uncertainty: Portfolio Selection. By Donald E. Farrar, University of Wisconsin

An Evaluation of a Forced-Choice Differential Accuracy Approach to the Measurement of Supervisory Empathy. By Richard S. Hatch, USI Industrial Science Division, Goleta, California

The Term Structure of Interest Rates. By David Meiselman, Department of Economics, University of Chicago

1959-1960 Award Winners:

Marketing in an Underdeveloped Economy: The North Indian Sugar Industry. By Leon V. Hirsch, Graduate School of Business Administration, Harvard University

A Heuristic Program for Assembly Line Balancing. By Fred M. Tonge, Graduate School of Industrial Administration, Carnegie Institute of Technology

Decentralization of Authority in a Bureaucracy. By Bernard H. Baum, Department of Sociology, University of Chicago

The Distribution of Automobiles, An Economic Analysis of the Franchise System. By Bedros Peter Pashigian, Dept. of Economics, Massachusetts Institute of Technology

The Choice of Wage Comparisons. By Martin Patchen, The University of Michigan

1958-1959 Award Winners:

Computer Models of the Shoe, Leather, Hide Sequence. By Kalman J. Cohen, Graduate School of Industrial Administration, Carnegie Institute of Technology

The Structure of a Retail Market and the Market Behavior of Retail Units. By Robert R. Holdren, Iowa State University of Science and Technology

Polya-Type Distributions in Renewal Theory, with an Application to an Inventory Problem. By Frank Proschan, Research Specialist, Boeing Scientific Research Laboratories, Seattle, Washington

Budget Control and Cost Behavior. By Andrew C. Stedry, Massachusetts Institute of Technology

Some Personality Determinants of the Effects of Participation. By Victor H. Vroom, Department of Psychology, University of Pennsylvania

Special educational price available for teachers, students, and educational libraries—\$1.00 per copy on PREPAID ORDERS ONLY.

The below-cost price of \$1.00 per copy is made possible by the Ford Foundation subsidizing publication of the dissertations, and Prentice-Hall contributing its publishing facilities and services, to achieve maximum distribution of these dissertations to teachers and students.

Orders that are not prepaid will be billed at \$4.50 per copy. This price is also applicable to the general public.

For copies, write to: Box 903

Prentice-Hall, Inc., Englewood Cliffs, New Jersey

**The Flow-of-Funds Approach to
Social Accounting:
Appraisals, Analysis and Applications**

Studies in Income and Wealth, No. 26

Part I of this volume contains papers dealing with the integration of the flow-of-funds accounts with other social accounting systems. Part II relates to the analytic uses and applications of flow-of-funds data in economics, finance, business and government. Discussions of sources of information such as financial institutions, unincorporated businesses, and consumers, are included in Part III. *Published for the National Bureau of Economic Research.*

500 pages. Tables, charts. \$10.00

**The Growth of Industrial Production
in the Soviet Union**

By G. Warren Nutter

The author's aim is to set the record straight for forty-odd years of Russian history in industrial growth from revolutionary to recent times, in its trends and fluctuations. He places developments in perspective by comparing them with those of Tsarist Russia and the United States, and estimates the volume of industrial production and labor productivity for the Soviet Union relative to the United States at benchmark dates. *Published for the National Bureau of Economic Research.*

734 pages. Tables, charts. \$15.00

**Freight Transportation in the Soviet
Union**

By Ernest J. Williams, Jr.

Major shifts in volume of freight traffic handled in the Soviet Union and in the United States are reported and compared. *Published for the National Bureau of Economic Research.*

270 pages. Tables, charts. \$4.50



Order from your bookstore, or

PRINCETON UNIVERSITY PRESS • Princeton, N.J.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

New Titles for the Economist

- ☐ **THE FIRM: Microeconomic Planning and Action**
By NEIL W. CHAMBERLAIN, Yale University, 448 pages, \$7.95.
- ☐ **INTRODUCTION TO BUSINESS ENTERPRISE**
By LYMAN KEITH and CARLO E. GUBELLINI, both at North-eastern University. 448 pages, \$6.95.
- ☐ **CASES IN COMMERCIAL BANK MANAGEMENT**
By LEONARD MARKS, Jr., Stanford University; and ALAN B. COLEMAN, Harvard University. Just published.
- ☐ **MANAGEMENT OF BANK FUNDS, Second Edition**
By ROLAND I. ROBINSON, Michigan State University. 464 pages, \$7.95.
- ☐ **MORTGAGE LENDING, Second Edition**
By WILLIS R. BRYANT, Bryant-Johnson Mortgage Company, San Francisco. Just published.
- ☐ **ECONOMIC SECURITY IN THE UNITED STATES**
By VALDEMAR CARLSON, Antioch College. Economics Handbook Series. 240 pages, \$6.50.
- ☐ **INDUSTRIAL ORGANIZATION AND MANAGEMENT, Fourth Edition**
By LAWRENCE L. BETHEL, President of Fashion Institute of Technology; FRANKLIN S. ATWATER, Vice President, Manufacturing, The Fafnir Bearing Company; GEORGE H. E. SMITH, Lawyer on American Economic Development, Government and Business; and HARVEY A. STACKMAN, Jr., Director, Management Services, Temple University; and President, Executive Development Council. 720 pages, \$7.95.
- ☐ **PRODUCTION MANAGEMENT**
By RAYMOND R. MAYER, Loyola University. 720 pages, \$8.95.
- ☐ **MODERN TECHNOLOGY AND CIVILIZATION: An Introduction to Human Problems in the Machine Age**
Edited by CHARLES R. WALKER, Yale University. 400 pages, \$7.50 (cloth), \$4.75 (paper).
- ☐ **NEW PATTERNS IN MANAGEMENT**
By RENSIS LIKERT, The University of Michigan. 288 pages, \$6.95.
- ☐ **HUMAN RELATIONS AT WORK, Second Edition**
By KEITH DAVIS, Arizona State University. McGraw-Hill Series in Management. 656 pages, \$7.95.

COLLEGE

McGRAW-HILL BOOK COMPANY, INC.



DIVISION

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

from McGRAW-HILL ✓

- ☐ **INCOME AND WELFARE IN THE UNITED STATES**
By JAMES N. MORGAN, HARVEY F. BRAZER, WILBUR J. COHEN, all of the University of Michigan; and MARTIN H. DAVID, The University of Wisconsin. Just published.
- ☐ **LABOR RELATIONS IN ARGENTINA, BRAZIL, AND CHILE**
By ROBERT J. ALEXANDER, Rutgers University, 432 pages, \$8.95.
- ☐ **MATHEMATICAL MODELS OF ECONOMIC GROWTH**
By JAN TINBERGEN, Netherlands School of Economics; and H. C. BOS, Yale University. Economic Handbook Series. 144 pages, \$6.95.
- ☐ **ECONOMIC ANALYSIS for Engineering and Managerial Decision Making**
By NORMAN N. BARISH, New York University, 752 pages, \$9.95.
- ☐ **ACCOUNTING: The Basis for Business Decisions**
By WALTER B. MEIGS, University of Southern California; and CHARLES E. JOHNSON, University of Oregon. 896 pages, \$7.95.
- ☐ **PRACTICAL FINANCIAL STATEMENT ANALYSIS, Fifth Edition**
By ROY A. FOULKE, Dun & Bradstreet, Inc. McGraw-Hill Accounting Series. 736 pages, \$8.95.
- ☐ **NATIONAL INCOME AND THE PRICE LEVEL: A Study in Macrotheory**
By MARTIN J. BAILEY, The University of Chicago. 320 pages, \$6.95.
- ☐ **THE GEOGRAPHY OF ECONOMIC ACTIVITY**
By RICHARD S. THOMAN, Queen's University, Ontario. McGraw-Hill Series in Geography. 608 pages, \$8.95.
- ☐ **INNOVATION IN MARKETING: New Perspectives for Profit and Growth**
By THEODORE LEVITT, Harvard University. McGraw-Hill Series in Advertising and Marketing. Just published.

In press:

- ☐ **GRAHAM-DODD-COTTLE-TATHAM: SECURITY ANALYSIS, Fourth Edition**
- ☐ **HARRIS: HIGHER EDUCATION: Resources and Finance**
- ☐ **JOHNSTON: ECONOMETRIC METHODS**
- ☐ **COPPOCK: INTERNATIONAL ECONOMIC INSTABILITY**
- ☐ **LEBERGOTT: MANPOWER IN ECONOMIC GROWTH: The American Record Since 1800**

Reserve your approval copies

330 WEST 42nd STREET, NEW YORK 36, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



The Economics of Trade Unions

By Albert Rees. Though fully accepted as an element of our society, the union remains a source of heated controversy. Professor Rees here views unionism solely from the economic point of view to discuss its impact on wage structure, prices, employment, productivity and the distribution of income. This able study includes the problems of internal union government, and will interest all who are concerned with labor economics and industrial relations. *A Volume in the Cambridge Economic Handbooks Series.* \$3.50

Through your bookseller

UNIVERSITY OF CHICAGO PRESS

5750 Ellis Avenue, Chicago 37, Illinois

IN CANADA: The University of Toronto Press

Princeton



UNIVERSITY
PRESS

Dividends Under the Income Tax

By Daniel M. Holland

The role of dividends in the tax structure and the more important development in dividend taxation are analyzed in this study. A portion of the story involves income tax history with dividends as the center of attention. The book is also concerned with special features of dividends and the laws under which they have been taxed. *Published for the National Bureau of Economic Research.*

207 pages. Tables, charts. \$4.50

The National Wealth of the United States in the Postwar Period

By Raymond W. Goldsmith

This is the only set of national wealth estimates now available for the United States. These figures for 1945-1958 continue and expand the author's 1900-1945 estimates, published in *A Study of Saving in the United States, Vol. III*. The estimates for aggregate national wealth are broken down by the main forms of tangible assets and also by the main economic sectors which hold these assets. *Published for the National Bureau of Economic Research.*

448 pages. Tables, charts. \$12.50

Order from your bookstore, or

PRINCETON UNIVERSITY PRESS, Princeton, New Jersey

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

METHODS AND MODELS OF OPERATIONS RESEARCH

by A. Kaufmann, Scientific Advisor, Institut Polytechnique de Grenoble, France

... a presentation of the methods and models of operations research at two levels. Part I offers the material without reliance upon higher mathematical techniques. Part II details the more important complex developments requiring mathematical sophistication. Originally published in French, this translation includes important revisions. In the P-H International Series in Management.
May, 1962 *Price to be announced*

ECONOMIC TECHNIQUE AND INDUSTRIAL MANAGEMENT, 2ND EDITION

by Jacques Lesourne, Lecturer of Political Economy, l'Ecole des Mines de Saint-Etienne, France

... offers an overall picture of the economics of enterprise based on a thorough knowledge of mathematical and statistical techniques which can be used to advantage in decision-making. This book appears jointly in the P-H Quantitative Methods Series, edited by W. Allen Spivey, and the International Series in Management.
May, 1962 *Price to be announced*

OPTIMAL INVESTMENT DECISIONS: RULES FOR ACTION AND CRITERIA FOR CHOICE

by Pierre Massé, General Commissioner of Equipment and Productivity for France

... introduces optimum choice in managerial decisions. Written from the viewpoint of the individual firm, the book stresses the normative perspective. It discusses optimal decision with relevance to the time dimension, the element of uncertainty, and the relation of the firm to the overall economy. Appears jointly in the P-H Quantitative Methods Series, edited by W. Allen Spivey, and the International Series in Management.
Aug., 1962 *Approx. 516 pp.* *Text price: \$9.75*

BUSINESS SIMULATION IN INDUSTRIAL AND UNIVERSITY EDUCATION

by Paul S. Greenlaw, The Pennsylvania State University, and Lowell W. Herron and Richard H. Rawdon, both at the Clarkson College of Technology

... a comprehensive treatment of business simulation for use in both university and industrial education programs. The book treats educational theory underlying game use and design of simulations, and game administration. In the P-H International Series in Management.
Feb., 1962 *356 pp.* *Text price: \$7.50*

For Approval copies, write to: Box 903

PRENTICE-HALL, INC.
Englewood Cliffs, New Jersey

BY LUDWIG VON MISES

*A brilliant demonstration of the consequences
of positivism for Western civilization*

**THE ULTIMATE FOUNDATION OF
ECONOMIC SCIENCE**

The philosophers have considered physics the paragon of science and blithely assumed that all knowledge is to be fashioned on its model. Traditional definitions of sciences have slighted history as "mere literature" and ignored the existence of economics.

\$5.00

The author exposes, as a fallacy, the contention that the methods of the experimental sciences are the sole fit means of proving the truth of factual propositions and demonstrates the disastrous consequences that adherence to this erroneous doctrine has had for Western civilization.

at all bookstores, or write

D. VAN NOSTRAND COMPANY, INC.

120 Alexander Street, Princeton, New Jersey

BACK NUMBERS WANTED

The Association will pay fifty cents a copy for the following issues (sent prepaid and in good condition) of the *American Economic Review*: March, 1916; March sup., 1934; March, 1939; March, 1944; September, 1946; March, June, 1948; March, 1950; December, 1951; May, June, 1956; May, June, 1958.

Send to

The Secretary

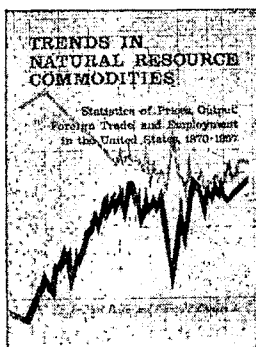
AMERICAN ECONOMIC ASSOCIATION

Northwestern University, 629 Noyes Street, Evanston, Illinois

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

**The needed reference on America's
natural resources . . .**

*A new book
from Resources
for the Future, Inc.*



TRENDS IN NATURAL RESOURCE COMMODITIES

**Statistics of Prices, Output, Consumption,
Foreign Trade, and Employment in the
United States, 1870-1957**

By NEAL POTTER and FRANCIS T. CHRISTY, JR.

*608 pages 9" × 12" size almost 400 tables, more
than 200 charts \$17.50*

Here at last are usable long-term statistics for all of the important natural resource commodities in the U. S.—minerals, fuels, agricultural products, timber.

Potter and Christy have taken data from hundreds of sources, have ordered and clarified it, and here present it in *uniform, consistent* series that span 87 years of the nation's economic development.

Their method permits something never before possible: the direct comparison of resource statistics from any given year with those of any other year.



Order from your bookstore, or

**THE JOHNS HOPKINS
PRESS**

BALTIMORE 18, MARYLAND

Wharton School

STUDIES IN CONSUMPTION, INCOMES, AND SAVINGS

Just published

The Structure of Income: Some Quantitative Essays, by Irving B. Kravis,
Wharton School, University of Pennsylvania

Table of Contents

Introduction

The level of income in the U.S.:

Comparisons over time and place

Differences between socio-economic groups

The division of income

Shares and sources of income in the U.S. by occupation and race

U.S. trends in income shares for human effort and for assets

Size distribution in the U.S.

International comparisons of size distributions

The temporal variability of income

303 pages \$6.50

Recently published

Proceedings of the Conference on Consumption and Saving, edited by Irwin Friend and
Robert Jones, Wharton School, University of Pennsylvania

Includes papers devoted to analyses of determinants of major categories of consumption as well as consumption and saving as a whole. Contributions by I. Friend, J. Crockett, A. Daniere, E. Gilboy, D. Brady, H. Houthakker, J. Haldi, V. Lippitt, W. Peters, M. Hamburg, S. Maisel, L. Winnick, R. Ferber, H. Watts, J. Tobin, F. Modigliani, A. Ando, R. Bodkin, S. Schor, L. Klein, R. Jones, I. Kravis, J. Miner, H. Lamale, and discussion by M. Reid, G. Orcutt, R. Eisner, R. Mack, J. Morgan, J. Murray, F. Clark, J. Mincer, J. Duesenberry, M. Friedman, E. Denison, A. Okun, G. Jaszi, G. Garvy, A. Zellner.

Volume 1 480 pages \$14.00

Volume 2 498 pages the set

Methodology of the Survey of Consumer Expenditures in 1950, by Helen Humes Lamale,
U.S. Bureau of Labor Statistics

A detailed description of the technical and administrative aspects of the 1950 B.L.S. survey, and an appraisal of findings. Comparisons with other current major survey sources and with official surveys back to 1888.

359 pages \$6.50

Consumption Patterns of the Aged, by Sidney Goldstein, Brown University

Investigates the significance of the increasing number of old persons in the United States in terms of their unique position with respect to such factors as labor force participation, income, health, and standard of living.

304 pages \$7.50

Still available—basic statistical source materials

Study of Consumer Expenditures, Incomes and Savings, Vols. I-XVIII.

\$125. the set (special price to university libraries only, \$87.50)

Address orders to:

**CONSUMER EXPENDITURES STUDY, E-4 Dietrich Hall,
University of Pennsylvania, Philadelphia 4, Pennsylvania**

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



Two landmark studies from THE TWENTIETH CENTURY FUND

"This encyclopedic study, five years in the making, could hardly be more timely."—EDWARD POSNIAK, *The Reporter*

EUROPE'S NEEDS AND RESOURCES

By J. FREDERIC DEWHURST, JOHN O. COPPOCK,
P. LAMARTINE YATES and associates

"Definitive study of Europe's post-war economic history and its prospects ahead to 1970. The treatment is exhaustive, extending to all the major branches of industry and society. *Europe's Needs and Resources* is a gold mine for market researchers. It is a 'must' item for econo-

mists and businessmen alike."—JAN HASBROUCK, *N. Y. Herald Tribune European Edition*. "The most comprehensive survey of the economic potentials of the region ever made."—*Christian Science Monitor*.

Maps and charts. 1198 pages. \$12.00

A study in depth of a huge city region that has profound implications for business, government and the future of our society

MEGALOPOLIS

The Urbanized Northeastern Seaboard of the United States

By JEAN GOTTMANN

A meticulously documented and refreshingly optimistic analysis of the vast urbanized area stretching from north of Boston to south of Washington. "Dr. Gottmann has written his monumental survey in crystalline English . . . a book whose far-reaching implications are pointed directly

into the future."—*Saturday Review Syndicate*. "Though Dr. Gottmann's main concern was to define what makes the area tick, his pages are crammed with statistics illustrating the unique character of the region."—*Business Week*.

Maps and tables. 810 pages. \$10.00

Unique plan brings you each new study as soon as released—to examine free

The purpose of The Twentieth Century Fund, which as an endowed philanthropic foundation bears the entire cost of research, is to find out the facts about matters of current public importance and make them as widely available as possible. In order to do this the Fund offers you an opportunity to examine each new publication as it is issued under a "Standing Order Plan." Return the coupon below for full details of this time-and-money-saving method of keeping abreast of important new social and economic research. This plan gives you a 25% discount on all Twentieth Century Fund books. You will also find the coupon convenient for ordering *EUROPE'S NEEDS AND RESOURCES* and *MEGALOPOLIS*.

THE TWENTIETH CENTURY FUND
41 East 70 St., New York 21, N. Y.

Please send me the following research publications of The Twentieth Century Fund:

- ☐ I enclose \$_____ ☐ Bill me
☐ *EUROPE'S NEEDS AND RESOURCES* (\$12.00)
☐ *MEGALOPOLIS* (\$10.00)

☐ Please send me details of the time-and-money-saving "Standing Order Plan" with a descriptive catalog of available publications and list of studies now being conducted by The Twentieth Century Fund.

Name _____

Address _____

City _____ Zone _____ State _____

AER

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE AMERICAN ECONOMY

by Betty G. Fishman and Leo Fishman
both at West Virginia University

This introductory textbook presents, in accurate and readable form, basic information about the nature of the American economy, the economic problems which are important today, and the principal tools which can be used in analyzing, solving, or ameliorating these problems and evaluating the results.

Each collaborator was selected on the basis of his special competence in a particular field and unlike some multi-author texts, **THE AMERICAN ECONOMY** is characterized by a logical progression and an integration of subject matter, concepts and statistics.

844 pages, \$7.95

With the collaboration of:

Jules Backman
Arthur R. Burns
Eugene Clark
Joel B. Dirlam
Margaret Greenfield
William F. Hellmuth
Raymond F. Mikesell
Harlow D. Osborne
Gerald G. Somers
Marshall D. Wattles

WORKBOOK to accompany **THE AMERICAN ECONOMY**

The workbook is divided into seven parts which are subdivided into four sections:

1. An outline of the correspondingly numbered chapter in the text.
2. A list of important terms and concepts introduced and used in the text chapter.
3. A series of true-false questions.
4. Essay questions and (in appropriate cases) some problems. 263 pages, \$2.95

INTERNATIONAL ECONOMICS

by Hugh B. Killough,
Northeastern University
Lucy W. Killough,
Wellesley College

In this new text, the principles of international economics are analyzed against a background of their historical development in order to demonstrate how these principles have evolved. At every turn, however, the authors emphasize the current usefulness of economic theory in clarifying present-day issues and solving present-day problems.

448 pages, \$6.50

D. VAN NOSTRAND COMPANY INC.

120 Alexander St. Princeton, New Jersey

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

BOOKS ON ECONOMICS FROM CHILTON

UNDERSTANDING FINANCIAL STATEMENTS AND CORPORATE ANNUAL REPORTS

By LOUIS O. FOSTER, *Professor of Accounting and Finance, Dartmouth*. How professional investors read between the lines of company reports. \$3.95

THEORY AND MEASUREMENT OF RENT

By JOSEPH S. KEIPER, ERNEST KURNOW, CLIFFORD D. CLARK, and HARVEY H. SEGAL. The first modernization of land-rent theory since 1910. Illustrated. \$7.50

PATTERN IN ORGANIZATION ANALYSIS: A Critical Examination

By SHERMAN R. KRUPP. Here are the main themes found in several major branches of organizational theory. \$5.00

WHAT KILLED PROSPERITY in Every State from Ancient Rome to the Present

By GRAHAM HUTTON. A book for every citizen who wants to know how inflation works and how it can be avoided. "Forcefully argued."—*Manchester Evening News* \$3.00

RISE OF AMERICAN ECONOMIC THOUGHT

By HENRY W. SPEIGEL. Selections from the writings on economics of twenty Americans from the time of the Puritans to the founding of the American Economic Association in 1885. \$5.00

STUDIES IN THE THEORY OF MONEY

By DOUGLAS VICKERS. An examination of English monetary theories during the century before Adam Smith's *Wealth of Nations*. \$6.50

HANDBOOK OF AREA SAMPLING

By JOHN MONROE and A. L. FINKNER. How to draw a sample showing adaptability of the materials to several commonly used sample designs. \$3.00

CLASSICAL KEYNESIANISM, MONETARY THEORY AND THE PRICE LEVEL

By SIDNEY WEINTRAUB. The well-known economist shows where Keynesian analysis has gone astray, and develops his own penetrating theory of inflation. Illustrated. \$4.00

Other books by SIDNEY WEINTRAUB:

**AN APPROACH TO THE THEORY OF
INCOME DISTRIBUTION** \$6.50

**GENERAL THEORY OF THE PRICE LEVEL,
OUTPUT, INCOME DISTRIBUTION AND
ECONOMIC GROWTH** \$3.50

Examination copies will gladly be supplied for your evaluation, billed on approval at your regular institutional discount.

CHILTON BOOKS

A Division of Chilton Company,
56th and Chestnut Streets
Philadelphia 39, Pa.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

PUBLIC FINANCE/FINANCES PUBLIQUES

International Quarterly Journal founded by J. A. Monod de Froideville
Publisher/Editeur

Foundation Journal Public Finance/Fondation Revue Finances Publiques
(Stichting Tijdschrift voor Openbare Financiën)

Vol. XVII

1962

No. 1

Gerhard Colm

Budgetary Projections in the Framework of Economic Projections and their Adaptations

Jersy Lubowicki

La planification budgétaire dans le cadre de la planification économique en régime socialiste

V. Kanesalingam

Problems of Financial Administration in a New State—with Particular Reference to Ceylon

A. G. Chandavarkar

Legal Tender Currency and Public Debt

Book Reviews/Comptes Rendus
New Publications/Publications nouvelles
Contributions in French or German are followed
by an English summary.

Committee of Directors: M. Masoin, Alan T. Peacock, B. Schendstok, P. Senf

Correspondence should be addressed to Prof. Dr. P. Senf, Universität des Saarlandes, Saarbrücken 15, Germany. Orders may be placed with the representative in the United States, Stechert Hafner Inc., 31 East 10th Street, New York, or directly with the Administration, 150 Riouwstraat, The Hague, Netherlands. Subscription rate for 1 year: \$10.90.

LAND ECONOMICS

a quarterly journal of

PLANNING, HOUSING & PUBLIC UTILITIES

Among Articles Appearing in November 1961 issue:

Bridge to the Future: The Concept of Human Progress *Van R. Potter*

Housing in a Growth Economy *Donald A. Fergusson and Raymond F. Valenti*

The Public Utility Scissors and Economic Policy *Warren S. Gramm*

Housing Space Demands: A Cross Section Analysis *Allan R. Winger*

Rates of Return to Improvement Practices on Private and Public Ranges
..... *B. Delworth Gardner*

Coal Mining and Changing Land Patterns in Oklahoma *Arthur H. Doerr*

Agricultural Taxation and India's Third Five-Year Plan
..... *Harold M. Groves and Murugappa O. Madhavan*

Annual Subscription \$6.00

Single Copy \$2.00

Sterling Hall, University of Wisconsin
Madison 6, Wisconsin

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

NEW SPRING PUBLICATIONS

THE MAKING OF ECONOMIC SOCIETY

by Robert L. Heilbroner

Robert L. Heilbroner's book offers a new approach to economics. In vivid prose and swift narrative style, he has set forth the basic elements of economic thought in a context at once dramatic and meaningful—the context of history. But Heilbroner has aimed higher than an introduction to economic history. As the reader retraces the sweep of economic evolution, from slave systems and feudalism down through the Industrial Revolution to the present, he is introduced to the essentials of economic theory as the key by which economic history must be understood. Thus history and theory mutually illuminate one another, each rendering the other more significant and intellectually exciting.

Heilbroner has not attempted to supplant the standard text. Although *The Making of Economic Society* presents the main outlines of economics in carefully organized fashion, it is intended primarily as a stimulus for more formal study, particularly in the case of economics majors. Few readers, however, will fail to benefit from the lucid exposition of fundamental economic ideas or from their brilliantly revealed relevance to economic issues, past and present.

June 1962 — Approx. 288 pages — Paperbound: \$2.95, Cloth: \$4.95

SELECTED READINGS IN ECONOMICS, 2nd Ed.

edited by C. Lowell Harriss, Columbia University

The new edition, containing over ninety readings, supplements your text and lectures on the principles of economics. The readings do not duplicate any textual discussion; they extend it. The editor has chosen a wide variety of readings to introduce the student to the classics, to some of the great economists, to outstanding sources of material, and to new ideas not always included in the average text.

February 1962 — 557 pages — Paperbound — Text price: \$3.95

write for approval copies

PRENTICE-HALL, INC.

BOX 903 — ENGLEWOOD CLIFFS — NEW JERSEY

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

1962 IRWIN TEXTS IN ECONOMICS:

THE AMERICAN ECONOMY: Principles, Practices, and Policies, 4th Ed.
by C. Lowell Harriss, Columbia University

ECONOMICS: An Analytical Approach, Rev. Ed.
by Ralph K. Davidson, Vernon L. Smith, and Jay W. Wiley,
Purdue University

MANAGERIAL ECONOMICS: Text and Cases
by Neil E. Harlan, Charles J. Christenson, and
Richard F. Vancil, Harvard University

ECONOMIC THEORY IN RETROSPECT
by Mark Blaug, Yale University

INTERNATIONAL TRADE: Theory and Economic Policy
by Jaroslav Vanek, Harvard University

**THE INVESTMENT, FINANCING, AND VALUATION
OF THE CORPORATION**
by Myron J. Gordon, Massachusetts Institute of Technology

LOMBARD STREET: A Description of the Money Market (Paper Bound)
by Walter Bagehot, with a New Introduction by Frank C. Genovese,
Babson Institute

UNITED NATIONS AND U.S. FOREIGN ECONOMIC POLICY
(Paper Bound)
by Benjamin H. Higgins, University of Texas

THE DEVELOPMENT OF THE INDIAN ECONOMY (Paper Bound)
by W. B. Reddaway, University of Cambridge

RICHARD D. IRWIN, INC.
HOMEWOOD, ILLINOIS



Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE AMERICAN ECONOMIC REVIEW

VOLUME LII

September 1962

NUMBER 4

ARTICLES

Multilateral Balancing in International Trade *Michael Michaely*

U. S. and Soviet Industrial Output *Alexander Tarn
and R. W. Campbell*

Consumption, Savings and Windfall Gains *M. G. Reid*

Multipliers and the Price Level *Paul Davidson*

Executive Incomes, Sales and Profits *J. W. McGuire,
J. S. Y. Chiu and A. O. Elbing*

REVIEW ARTICLE

Economic Growth in the United States *Moses Abramovitz*

COMMUNICATIONS

The Analysis of Demand *A. P. Lerner*
Mathematical Appendix *Hirofumi Uzawa*

Effect of Integration on Property Values *W. M. Ladd*

The Journal of
THE AMERICAN ECONOMIC ASSOCIATION

THE AMERICAN ECONOMIC ASSOCIATION

Founded in 1885

OFFICERS

President

EDWARD S. MASON, Harvard University

President-elect

GOTTFRIED HABERLER, Harvard University

Vice-Presidents

ALBERT G. HART, Columbia University

RICHARD A. MUSGRAVE, Princeton University

Secretary-Treasurer and Editor of Proceedings

HAROLD F. WILLIAMSON, Northwestern University

Managing Editor of the American Economic Review

BERNARD F. HALEY, Stanford University

EXECUTIVE COMMITTEE

Elected Members of the Executive Committee

J. KENNETH GALBRAITH, Harvard University

RALPH A. YOUNG, Board of Governors, Federal Reserve System

EWAN CLAGUE, U. S. Department of Labor

CHARLES P. KINDLEBERGER, Massachusetts Institute of Technology

ROBERT TRIFFIN, Yale University

W. ALLEN WALLIS, University of Chicago

Ex-Officio Members

THEODORE W. SCHULTZ, University of Chicago

PAUL A. SAMUELSON, Massachusetts Institute of Technology

Publication and business office at Curtis Reed Plaza, Menasha, Wisconsin.

THE AMERICAN ECONOMIC REVIEW, including four quarterly numbers, the *Proceedings* of the annual meetings, the *Directory* and supplements, is published by the American Economic Association and is sent to all members five times a year, in March, May, June September and December.

Membership dues of the Association are \$6.00 a year, \$5.00 of each year's dues being in payment of a year's subscription. Subscriptions to the REVIEW by nonmembers are \$6.00 a year. Single copies, \$1.50.

Correspondence relating to the *Papers and Proceedings*, the *Directory*, advertising, permission to quote, business matters, subscriptions, membership and changes of address may be sent to the secretary, Harold F. Williamson, Northwestern University, Evanston, Illinois. To be effective, notice of change of address must reach the secretary by the 15th of the month previous to the month of publication.

Second-class postage paid at Menasha, Wisconsin. Printed in U.S.A.

THE AMERICAN ECONOMIC REVIEW

JOHN G. GURLEY, Acting Managing Editor

LORIE TARSHIS, Acting Associate Editor

DORIS MERRIAM, Assistant

BOARD OF EDITORS

Martin Bronfenbrenner

Albert O. Hirschman

Alfred E. Kahn

Roland N. McKean

Joseph A. Pechman

Melvin W. Reder

Tibor Scitovsky

Robert Solow

Volume LII

SEPTEMBER 1962

Number 4

ARTICLES

Multilateral Balancing in International Trade *Michael Michaely* 685

A Comparison of U. S. and Soviet

Industrial Output

*Alexander Tarn and
R. W. Campbell* 703

Consumption, Savings and Windfall Gains

M. G. Reid 728

Income and Employment Multipliers,
and the Price Level

Paul Davidson 738

Executive Incomes, Sales and Profits

*J. W. McGuire,
J. S. Y. Chiu and A. O. Elbing* 753

REVIEW ARTICLE

Economic Growth in the United States

Moses Abramovitz 762

COMMUNICATIONS

The Analysis of Demand

A. P. Lerner 783

Mathematical Appendix

Hirofumi Uzawa 797

The Effect of Integration on Property Values

W. M. Ladd 801

BOOK REVIEWS

ADELMAN, Theories of Economic Growth and Development, by E. McKinley 832

AITKEN, American Capital and Canadian Resources, by W. C. Hood 841

ASHER, HAGEN AND OTHERS, Development of the Emerging Countries: An Agenda
for Research, by F. C. Shorter 851

BALDWIN, Antitrust and the Changing Corporation, by I. M. Stelzer 889

BARNA, Investment and Growth Policies in British Industrial Firms, by K. Kurihara 831

BERNAT AND ENYEDI, A Magyar Mezogazdasag termeles: korzetei. I. A szantofoldi
novenytermeles korzeteti, by M. L. Szabo 859

Manuscripts and editorial correspondence relating to the regular quarterly issues of this REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California. *Style Instructions* for guidance in preparing manuscripts in acceptable form will be provided upon request to the editor.

No responsibility for the views expressed by authors in this REVIEW is assumed by the editors or the publisher, The American Economic Association.

Copyright American Economic Association 1962

BOULDING, Conflict and Defense: A General Theory, by J. C. Harsanyi	903
CHAMBERLAIN, The Firm: Micro-Economic Planning and Action, by R. V. Mattessich	877
DENISON, The Sources of Economic Growth in the United States and the Alternatives Before Us (a review article), by M. Abramovitz	762
DEWHURST, COPPOCK, YATES AND ASSOCIATES, Europe's Needs and Resources, by M. Gilbert	836
FISCHER, Bank Holding Companies, by G. W. Woodworth	870
FISHER, WITH KAYSEN, A Study in Econometrics: The Demand for Electricity in the United States, by A. Zellner	885
FLORENCE, Post-War Investment, Location and Size of Plant, by K. Kurihara	831
FLORES, Tratado de economía agrícola, by J. O. Bray	894
FUCHS, Changes in the Location of Manufacturing in the United States since 1929, by H. S. Konijn	879
GITLOW, Economics, by B. J. Jones	810
GOODRICH, CRANMER, RUBIN AND SEGAL, Canals and American Economic Development, by H. M. Gray	842
HAMILTON, The Consumer in Our Economy, by V. Wyckoff	901
JASNY, Soviet Industrialization, 1928-1952, by A. Erlich	846
JONES AND GREBLER, The Secondary Mortgage Market, by H. Jones	868
KENDRICK, Productivity Trends in the United States, by R. A. Kavesh	834
KRONROD, Problemi politicheskoi ekonomii sotsializma: vypusk 1960g (Problems of the Political Economy of Socialism), by M. Dobb	862
KUZNETS, Capital in the American Economy, Its Formation and Financing, by C. L. Schultze	814
LESTER, The Economics of Unemployment Compensation, by H. Malisoff	899
LI, The Statistical System of Communist China, by K. C. Yeh	853
LUNDBERG, Produktivitet och räntabilitet. Studier i kapitalets betydelse inom svenskt näringsliv (Productivity and Profitability. Studies of the Role of Capital in the Swedish Economy), by G. Ohlin	827
MALYSHEV, Obschestvenny uchët truda i tsena pri sotsializme (The Social Accounting of Labor and Price under Socialism), by J. M. Montias	864
MEANS, Pricing Power and the Public Interest, by E. W. Clemens	887
MILLER, The Enterprise of a Free People: Aspects of Economic Development in New York State During the Canal Period, 1792-1838, by H. M. Gray	842
MOES, Local Subsidies for Industry, by A. Simmons	881
MORGAN, Labor Economics, by A. T. Helbing	896
MUNTKE, Horizontale Karteller, by F. B. Jensen	893
NETTELS, The Emergence of a National Economy, 1775-1815. Vol. 2, The Economic History of the United States, by F. G. Hill	844
NOVE, The Soviet Economy: An Introduction, by J. Taylor	849
ONIDA, Economia d' azienda, by A. L. Sancetta	883
ORCUTT AND OTHERS, Microanalysis of Socioeconomic Systems: a Simulation Study, by T. M. Whitin	905
ROBERTS, Trade Unions in a Free Society, by E. C. Brown	897
ROTHENBERG, The Measurement of Social Welfare, by P. Streeten	823
SENGUPTA AND SEN, India's Economic Growth Processes, Problems and Policies, by D. L. Spencer	857
SHACKLE, Decision Order and Time in Human Affairs, by S. Schoeffler	822
SMITH, The Economics of Socialism Reconsidered, by B. P. Beckwith	861
SOBOL', Ocherki po voprosam balansâ narodnogo khoziaistva (Essays on Problems concerning the Balance of the National Economy), by J. M. Montias	864
THORE, Household Saving and the Price Level, by E. W. Gilboy	829
VANEK, International Trade: Theory and Economic Policy, by K. J. Rothwell	871
VILLARD, Economic Performance—An Introduction to Economics, by K. D. Roose	809
WEBER, Schein und Wirklichkeit in der Volkswirtschaft, by H. Apel	812
WONNACOTT, P., The Canadian Dollar, 1948-1958, by R. E. Caves	873
WONNACOTT, R. J. Canadian-American Dependence: An Interindustry Analysis of Production and Prices, by R. E. Caves	873

Economic and Social Consequences of Disarmament, by A. L. Gray, Jr.	906
Economic Impacts of Disarmament, by A. L. Gray, Jr.	906
Formulating Industrial Development Programmes—with Special Reference to Asia and the Far East, by A. A. Rozental	858
International Payments Imbalances and Need for Strengthening International Financial Arrangements. (Hearings before and Report of the Subcommittee on International Exchange and Payments of the Joint Economic Committee), by E. Zupnick	876
Méthodes de prévision du développement économique à long terme, by S. Spiegelglas	850
National Transportation Policy; Report of the Special Study Group on Transportation Policies in the United States, by L. Warner	891

OTHER DEPARTMENTS

Titles of New Books	909
Periodicals	923
Notes	935
Titles of Doctoral Dissertations	960

The American Economic Review

VOLUME LII

SEPTEMBER 1962

NUMBER FOUR

MULTILATERAL BALANCING IN INTERNATIONAL TRADE

By MICHAEL MICHAELY*

The purpose of this paper is to present a quantitative analysis of the extent of multilateral balancing in international trade. Problems involved in measuring multilateral balancing, as well as the scope and method of the study, will be indicated in the first section. The following section will contain the study's basic findings, along with observations on the development of multilateral balancing over time and on its magnitude within blocs of countries. In the third section the discussion will turn to the attributes of countries whose trade is highly multilateral, and to the role of specific countries as "agents" of multilateral balancing in world trade.

I. Concepts and Method of Measurement

The concepts of "bilateral balancing" and "multilateral balancing" are used in the present study to refer in each case to a certain attribute of the geographic distribution of a country's trade, and not to indicate a certain policy pursued by the country. Thus, a country may be termed "highly bilateral" even though its government is as far as possible from following bilateral policies—and vice versa.¹

*The author is lecturer in economics at the Eliezer Kaplan School of Economics and Social Sciences, Hebrew University of Jerusalem. This study was undertaken during his stay at the University of Chicago, which was made possible by the University's postdoctoral fellowship in political economy and by a research grant from the Rockefeller Foundation. Harry G. Johnson and Simon Kuznets have contributed helpful comments and suggestions.

¹It should also be stated, to prevent misunderstandings, that terms like "the country directs its exports" or "the country is interested in certain imports" do not purport to convey the impression that it is the government which "directs" exports, or that the "interest" is that of the government or is otherwise expressed in some centralized, collective form. These terms and others like them are shorthand descriptions of situations that are usually determined by separate actions of all economic units within the country.

As long as international economic transactions consist purely of exchange of goods among nations, the distinction between "bilateral balancing" and "multilateral balancing" is simple indeed. A transaction in which country A exports goods to country B in exchange for other goods which it imports from B is bilaterally balanced. When, on the other hand, the proceeds of A's exports to B are used to finance imports from country C to country A, the (combined) transaction is multilaterally balanced.

The introduction of trade in services does not create any conceptual difficulty: exports and imports of services are identical, in this respect, with exports and imports of goods. Services may be exchanged against goods or against other services in a transaction which is either bilaterally or multilaterally balanced. Trade in services presents, however, a major practical obstacle to the measurement of multilateral balancing: while information on the geographic distribution of trade in goods is available for almost all countries and for long periods of time, and is usually quite reliable, data on the geographic distribution of trade in services are meager and of a doubtful quality. For this reason, trade in services is excluded from the present study altogether. This leads probably to many errors; transactions that appear as multilaterally balanced when trade in services is abstracted from may in fact be bilaterally balanced, and vice versa. It is hoped, however, that the errors involved are not large enough to invalidate the results of the study, since in most countries the trade in services is small relative to the size of trade in goods.

The existence of international capital movements, on the other hand, constitutes a conceptual as well as a practical challenge to the measurement of multilateral balancing. To be sure, some capital movement must be involved in most international transactions in goods—and *a fortiori* in multilateral transactions. In the example above, country A does not actually acquire, in exchange for the goods which it exports to B, either goods from B or from C. It will usually acquire, instead, short-term financial assets in B, which may be used later to pay for imports from B or from C. But suppose that by the end of the period of reference (say, the calendar year) these assets have not been used at all. There is no way to tell whether they will be used in the future to buy goods in B or C. (Indeed, it is even impossible to assert that these assets will be liquidated at any time in the future!) In the same way, when A finances imports from B by running down short-term assets in B outstanding at the beginning of the period of reference, one cannot tell whether these assets had been acquired by sales of goods to B or to C. One cannot, therefore, term these transactions as either "bilateral" or "multilateral."

Consider now long-term capital transfers. Suppose country A borrows from country B, and uses the proceeds to finance imports from the lending country. The exchange in this case is not of goods for other goods but of goods for financial assets. One could extend the terms "bilateral balancing" and "multilateral balancing" to call a transaction of this nature "bilateral," or to call it "multilateral" when the proceeds of B's loan to A are used to finance A's imports from C. In the present study a narrower definition of "bilateral balancing" and "multilateral balancing" is adopted: the terms will apply only to international *trade*, that is, to the exchange of goods (and conceptually, but not in practice, also of services) for other goods (and services), and not to international transactions where goods are exchanged for financial assets. Besides the conceptual difficulties leading to this choice of terms, it is also dictated by overwhelming pragmatic reasons. A measurement of multilateral balancing when this term is interpreted more broadly would require data on the geographic distribution of capital transfers from and to each country, which are usually unavailable and whose reliability may often be doubted even when they do exist.²

This definition of the terms leads to an exclusion from the coverage of this study of all countries which maintain consistently large import or export surpluses;³ it is obvious that a large fraction of international transactions of these economies consists of the exchange of goods for financial assets. It will be assumed, on the other hand, that where exports and imports are roughly equal, that is, when no *net* capital transfers to or from the country take place, *gross* capital movements (in opposite directions and balancing each other) are also absent. This amounts to an assumption that an approximate equality of exports and imports implies the absence of transactions in which goods are exchanged for financial assets, so that in countries maintaining this equality "multilateral balancing," in the narrow sense adopted in this study, may be measured.⁴

It is probably clear, but should nevertheless be stated, that one cannot trace individual transactions (except when these take the form of barter trade). The exporter from A to B, to repeat, acquires short-term

² The data on capital transfers would also have to distinguish between long- and short-term capital movements. A particularly baffling problem of principle would be presented by unilateral transfers (gifts, grants, donations or reparations). Here no transaction exists at all, in the ordinary sense of this word. The concepts of "bilateral balancing" and "multilateral balancing" would have to be stretched even further to include transfers of this nature.

³ A surplus of imports over exports, or vice versa, is considered "large" for the purpose on hand when one of these magnitudes exceeds the other by over 50 per cent. While a few countries are thus disqualified on account of maintaining large import surpluses, only one country—Venezuela—is excluded from the study for having large export surpluses.

⁴ It is gross rather than net movements of capital which are of interest in this context.

financial assets in B; he will normally sell these assets to some bank in A, and it would be impossible—and immaterial—to know whether these specific proceeds will be used to pay for imports from B or from C. Instead of following individual transactions, one should consider aggregates of transactions during a period of reference, which in the present study will be a calendar year.

The index which will measure the degree of multilateral balancing in a country's trade, to be denoted for each country j by T_j , is the following:

$$(1) \quad T_j = 100 \frac{\sum_s \left| \frac{X_{sj}}{X_{.j}} - \frac{M_{sj}}{M_{.j}} \right|}{2}$$

where X_{sj} stands for exports of country j to any country s , during the year, $X_{.j}$ stands for country j 's total exports, M_{sj} for country j 's imports from country s , and $M_{.j}$ for j 's total imports—all terms being value magnitudes and all (or at least each pair in the numerator's fractions) denoted in the same currency. The differences whose sum constitutes the numerator are measured by their absolute magnitudes, regardless of sign. For convenience, the index is put in percentage form. It expresses the share of the country's trade which is conducted on a multilateral basis. The potential range of the index is from zero to 100. It will be zero when the proportion of each foreign country's share in country j 's exports is equal to the proportion of that country's share in j 's imports; this is defined as perfect bilateral balancing. The index will be 100, on the other hand, when the country in question buys nothing in countries to which it exports—and, of course, vice versa; this is defined as perfect multilateral balancing.⁵

The period with which the study is mainly concerned is the postwar

This may be demonstrated by an example of an extreme situation. Suppose that country A's trade during the period of reference looks as follows:

	<i>A's Exports to:</i>	<i>A's Imports from:</i>
Country B	100	—
Country C	—	100
	—	—
World	100	100

On this evidence alone, A appears to practice perfect multilateral balancing. Suppose, however, that long-term capital movements, of the size of 100 units each, take place from A to B and from C to A during the period. By the broad definition of multilateral balancing, which takes into account exchange of goods for financial assets, A's economic transactions would be termed perfectly bilateral. The narrower definition of the concept of multilateral balancing which is used in this study does not enable the derivation of any conclusions about the extent of multilateral balancing in A.

⁵ A somewhat different index was used in measurements of multilateral trade done by

one. For obvious reasons, measurements of multilateral balancing could not be carried out for each single year of this period. Instead, a sample of three years has been selected: 1948, 1954 and 1958—the latest year for which data were available when the study was carried out. For the sake of comparison, indexes of multilateral balancing have also been constructed for 1938, the last prewar year.

While in principle the study should have covered all the world's countries and territories, data for some were not available. Likewise, it was felt that the investigation of some of the smallest (in terms of size of international trade) territories may not be rewarding, and might make the presentation of the study's findings too cumbersome. It should also be recalled that a few countries disqualify for the study on account of their large export or import surpluses.⁶ The study covers in effect 65 countries and territories (for some of which measurements of multilateral balancing for 1938 and/or 1948 could not be carried out for lack of data). Five of these countries belong to the Soviet bloc, and while neither the total value of their trade nor that of the bloc as a whole is known, the trade of the five presumably constitutes the major portion of the bloc's foreign trade. The combined trade of the other 60 countries amounts to around 90 per cent of the trade in goods in the non-Soviet world. Despite the few omissions, therefore, the study comprehends an overwhelming majority of the world's international trade.

II. *The Extent of Multilateral Balancing*

The indexes of multilateral balancing are presented in Table 1. The three averages which appear at the bottom of the table are: (1) an unweighted average index of multilateral balancing for the 65 countries; (2) an unweighted average for 60 countries only, excluding the five

the League of Nations [6, 1933, p. 60]. In symbolic terms, using the notation of the text, the League of Nations' index is

$$\frac{\sum_s |X_{sj} - M_{sj}|}{X_{.j} + M_{.j} - |X_{.j} - M_{.j}|}$$

⁶In addition to the grounds for exclusion of countries from the scope of this study given in the text, it was deemed misleading to include countries which to a large extent send their exports or receive their imports through intermediate countries in which, in turn, these constitute only a transit trade. For that reason the study does not include Paraguay, which carries a large portion of its trade with the outside world through Argentina. Transit trade may be included, though, in the trade records of other countries, and the lack of ability to distinguish it from "genuine" trade may contribute to errors in the indexes of multilateral balancing.

Norway, a country with a large import surplus on merchandise account which is offset mainly by a surplus on services account rather than on capital account is included in the study. Lack of information on the geographical distribution of trade in services should subject the index of multilateral balancing of Norway to much higher margins of error than the indexes of most other countries.

TABLE 1—INDEXES OF MULTILATERAL BALANCING*

Country	1938	1948	1954	1958	1954-58 ^a
1. Netherlands Antilles	(..) ^b	76.6	78.4	75.6	77.0
2. Mauritius	(..) ^b	51.9	61.0	55.2	58.1
3. Bolivia	76.5	41.5	51.2	53.4	52.3
4. Burma	16.3	53.4	43.4	55.7	49.6
5. Indonesia	31.3	43.9	42.7	48.9	45.8
6. Haiti	26.4	32.2	40.7	50.0	45.4
7. Hong Kong	(..) ^b	34.7	41.7	43.4	42.6
8. Ghana	33.4	49.2	39.2	40.8	40.0
9. Iran	61.1	38.3	35.5	43.9	39.7
10. Malaya and Singapore	54.1	39.1	41.7	36.0	38.9
11. Ceylon	60.9	45.8	35.8	41.6	38.7
12. Japan	35.2	50.6	38.9	35.0	37.0
13. Kenya-Uganda	38.3	34.9	36.6	36.4	36.5
14. Trinidad and Tobago	36.5	44.0	36.1	36.8	36.5
15. Australia	28.4	31.4	32.3	40.1	36.2
16. Uruguay	31.7	30.4	27.2	43.4	35.3
17. Thailand	66.6	34.4	36.3	33.9	35.1
18. Nicaragua	17.3	27.9	29.7	37.6	33.7
19. Rhodesia and Nyasaland	(..) ^b	(..) ^b	34.2	31.6	32.9
20. Pakistan	(..) ^c	33.1	32.6	31.3	32.0
21. Tanganyika	27.9	22.1	29.7	32.7	31.2
22. Egypt	26.2	39.3	30.6	29.3	30.0
23. India	24.0	15.7	29.6	29.0	29.3
24. Argentina	27.6	43.2	26.0	32.5	29.3
25. Nigeria	27.0	26.6	33.2	25.3	29.3
26. Peru	30.1	49.9	33.4	23.8	28.6
27. Portugal	23.1	31.9	29.2	27.8	28.5
28. Spain	27.3	50.2	24.2	32.0	28.1
29. Italy	28.7	41.0	24.3	27.7	26.0
30. France	25.2	32.1	28.3	22.8	25.6
31. Dominican Republic	45.0	47.9	23.8	26.9	25.4
32. Yugoslavia	14.0	17.3	29.4	21.3	25.4
33. New Zealand	38.1	31.9	24.1	22.9	23.5
34. Morocco	33.7	19.4	25.8	20.4	23.1
35. Chile	38.7	33.4	23.6	22.3	23.0
36. Austria	17.2	21.7	21.4	24.4	22.9
37. El Salvador	31.4	14.9	16.2	29.6	22.9
38. Sweden	23.2	20.5	20.9	24.6	22.8
39. Netherlands	27.0	27.1	21.3	23.1	22.2
40. Norway	21.6	26.2	21.6	22.8	22.2
41. Philippines	13.5	24.7	22.4	21.9	22.2
42. Ecuador	24.2	47.7	23.0	20.0	21.5
43. Iceland	20.3	34.8	23.4	19.0	21.2
44. Brazil	25.6	17.7	17.7	23.6	20.7

^a Average of 1954 and 1958.^b Information not available.^c Not applicable.

Source: Data from [9] [8] and [5].

* In constructing the index of multilateral balancing of a country, exports or imports to countries which individually constituted very small fractions of the total exports or imports of the country in question were disregarded. The trade excluded in this way amounts usually to around 5 per cent and rarely reaches 10 per cent or more of the total trade of the country.

TABLE 1—*Continued*

Country	1938	1948	1954	1958	1954-58 ^a
45. Costa Rica	20.6	12.4	17.9	23.4	20.7
46. Switzerland	19.1	23.3	19.4	21.4	20.4
47. Germany	26.8	63.4	21.8	18.7	20.3
48. Denmark	23.4	20.7	23.8	15.9	19.9
49. Turkey	15.9	26.1	17.8	21.3	19.6
50. Honduras	26.4	16.9	21.2	17.6	19.4
51. Belgium-Luxembourg	20.4	24.3	21.9	16.6	19.3
52. Finland	31.3	21.4	22.1	15.8	19.0
53. United Kingdom	22.0	27.8	21.0	16.7	18.9
54. Guatemala	14.5	33.1	18.4	18.3	18.4
55. Colombia	19.7	20.5	19.0	17.4	18.2
56. Tunisia	18.5	37.8	20.3	14.6	17.5
57. Canada	36.4	26.4	18.5	16.2	17.4
58. United States	27.8	30.5	18.2	15.4	16.8
59. Cuba	13.3	39.4	15.0	17.4	16.2
60. Mexico	21.3	13.9	15.6	9.7	12.7
61. U.S.S.R.	31.4	(...) ^b	12.3	13.1	12.7
62. Hungary	18.6	17.2	10.9	12.0	11.5
63. Poland	40.2	31.1	9.3	10.2	9.8
64. Czechoslovakia	16.4	16.2	7.1	7.3	7.2
65. Bulgaria	12.3	15.5	7.3	5.4	6.4
Average, all countries	28.8	32.5	27.3	27.7	
Average, non-Soviet countries	29.3	33.4	28.8	29.2	
Weighted average, non-Soviet countries	27.5	30.8	23.9	22.4	

Soviet countries; this is provided for comparison with (3) a weighted average for these 60 countries, where the proportion of each country's exports in world exports serves as the weight of the country's index. The five Soviet countries are excluded here for lack of data on the absolute size of their trade in comparison with the trade data available for other nations.

The rise of multilateral balancing from 1938 to 1948, which appears from Table 1, and even more the decline of multilateral balancing between 1948 and later postwar years, seem surprising. The early postwar period was distinguished by extreme bilateral trade policies in many countries, certainly in comparison with the policies followed in later years. I suspect that the 1948 indexes of multilateral balancing are indeed misleading for many countries, so that trends supposedly revealed by them may be doubted. The reason is that in 1948, as in other early postwar years, international transfers of capital were unusually large in relation to the size of international trade; this is true both for the world as a whole and for many individual countries. Although, we recall, countries with a consistently high gap between the volumes of exports and imports are not within the confines of this study, the in-

vestigation does include some countries that show large import (and, in a few cases, export) surpluses in 1948, a fact which—as has been argued earlier—detracts from the validity of the indexes of multilateral balancing for these economies. Germany provides probably the most outstanding example for the operation of this factor.

It may be advisable, therefore, not to pay overdue attention to the trends supposedly established by the indexes for 1948. But two other phenomena revealed by the findings of Table 1—the decline of the level of multilateral balancing from 1938 to the late postwar period, and the relative stability, or even slight decline, between 1954 and 1958—also do not seem to conform with what might have been expected on the basis of our general knowledge of foreign-trade policies followed in the last few decades. The late 'thirties are usually considered a period of highly restrictive, highly bilateral trade policies—certainly more so than the middle and late 'fifties. Yet a lower level of multilateral balancing is found in recent years than in 1938. Even when attention is confined to non-Soviet European countries, where bilateral policies were widely practiced in the 'thirties but have been out of fashion in recent years, it appears that the level of multilateral balancing changed between the periods under consideration only little in most countries, and in both directions. Most surprising, probably, is the situation in Germany: in this stronghold of restrictive bilateral trade policies before the war, and of free, multilateral trade policies in the 'fifties, the level of multilateral balancing seems to have actually declined between 1938 and 1954-58.

It is also odd that the level of multilateral balancing did not change—or even declined slightly, if judged by the weighted averages—between 1954 and 1958. Although 1954 was a year of nearly “normal” trade, controls over foreign trade, which almost inevitably lead to bilateral policies, had certainly been more widespread at that time than in 1958. Apparently, this change does not find its reflection in the indexes of multilateral balancing. A tentative conclusion that may be drawn from this fact, as well as from the comparisons of 1954-58 with 1938, is that foreign-trade policies followed by governments probably have a weak effect on the level of multilateral balancing in comparison with other forces which participate in determining this level.

That in general the factors leading to bilateral balancing of trade are indeed potent can scarcely be doubted. Only in very few countries does multilateral trade usually constitute over half of the country's total trade, according to the indexes presented in Table 1; and although these indexes cannot, due to the deficiencies inherent in them, claim to be precise measurements of the degree of multilateral balancing, it is unlikely that they could deviate so much from the “true” measures as

to falsify considerably the over-all picture. The weighted average index of multilateral balancing is probably close to the true share of multilateral trade in total world trade. This share thus appears to be, for the non-Soviet world, around 28 per cent in 1938, 24 per cent in 1954, and 22 per cent in 1958.⁷

An examination of the indexes of multilateral balancing for individual countries will show large fluctuations in their relative positions. Only a few countries will be found with a consistently high or a consistently low level of multilateral balancing in all four years of observation. Profound changes in the geographic structure of trade which took place during the war and the early postwar years—as well as the afore-mentioned “distortions” of the indexes of multilateral balancing in 1948 by large-scale capital transfers—are responsible for these fluctuations. A close resemblance is found, on the other hand, between the relative positions of countries in 1954 and in 1958. By 1954 the trade of most countries had already become “normal,” and changes in its geographic distribution, as well as in others of its characteristics, have been slow since. In particular, the pattern of the geographic distribution of export and import surpluses, of which the index of multilateral balancing is an

⁷The measurement of multilateral balancing in the early 'thirties carried out by the League of Nations [6] appears to show an even lower degree of multilateralism. These studies are based on the trade of 22 countries, representing about 70 per cent of world trade. The method used was first to divide all trade into three groups: (I) bilateral merchandise trade; (II) balances of total merchandise trade; and (III) triangular merchandise trade. The proportions of these three groups in total trade are (in per cent):

	1929	1931	1932	1933	1934	1935
I	71.7	68.1	69.4	71.3	71.9	74.2
II	9.9	16.4	15.6	14.4	13.0	12.0
III	18.4	15.5	15.0	14.3	15.1	13.8

The first group represents clearly bilateral trade, and the third group multilateral trade, while the nature of the second group cannot be determined. The ratio of the third group to the first and third, which is the index of multilateral balancing described earlier in footnote 5 (it was actually used by the League of Nations only in the 1933 *Review*) is as follows:

1929	1931	1932	1933	1934	1935
20.3	18.5	17.5	16.6	17.4	15.7

Probably on the strength of these measurements, Folke Hilgerdt estimated that “about 70% of the world's merchandize trade consists of the mutual and balancing exchange of goods” [2, p. 176]; but that of the remaining 30 per cent about one-third represents a bilateral exchange of goods for services (among which Hilgerdt mentioned specifically only “the yield of foreign investment,” that is, capital services), so that the truly multilateral trade comes to about 20 per cent of world trade. This adjustment for bilateral exchange of goods for services does not strike me as fully legitimate: any adjustment of this nature should require the introduction of *all* trade in services, whether they are exchanged for goods or for other services, and whether the trade in them is bilateral or multilateral.

It should be noted that the twenty-two countries covered by the League of Nations' studies include a much stronger representation of highly bilateral (in those years) than of highly multilateral economies.

expression, has changed substantially since 1954 only in a small number of countries. Thus, in deriving conclusions about multilateralism in various countries, we shall focus our attention in the rest of this study on the late postwar period, and confine our observations to 1954 and 1958, neglecting the earlier years.

To begin with, the large degree of resemblance in the relative level of multilateral balancing of countries in 1954 and 1958 renders it permissible to regard an average of the indexes in the two years, for each country, as representing the country's level of multilateral balancing in recent years. These average indexes for 1954 and 1958 are shown in

TABLE 2—INDEX OF MULTILATERAL BALANCING BY
MONETARY-GEOGRAPHIC AREAS, 1954-58

Area	Mean	Weighted Average
United States and Canada	17.1	16.9
Latin America—Dollar Countries	23.1	18.7
Latin America—Nondollar Countries	38.0	35.1
United Kingdom	18.9	18.9
Overseas Sterling Area	36.0	34.9
Continental Western Europe ^a	22.8	22.3
Eastern Europe	9.5	..
Rest of the World	31.3	35.2

^a Including Continental OEEC countries, Spain, Finland, and Yugoslavia.

the last column of Table 1; countries are arranged in the table in descending order of the level of these indexes.

The large number of countries covered by the analysis does not enable a separate investigation of each single country. It is possible, however, to examine the positions of large groups of countries. In Table 2, derived from the preceding table, indexes of multilateral balancing are shown for eight geographic or monetary areas, most frequently used in studies of the postwar world, into which the 65 countries are divided.

It is certainly not surprising to find that Soviet Eastern Europe has the highest level by far of bilateral balancing in international trade. In fact, no single country outside this bloc—Mexico being a borderline case—has an index of multilateral balancing as low as that of any country within the Soviet bloc. Bilateral trade forms as high as 90 per cent, sometimes even more, of the trade of Soviet countries. It is interesting to observe, from Table 1, that the central nation in the Soviet area, the USSR, which in distinction from the other four countries in the area had had the same political-economic regime in 1938 as in 1954-58, nevertheless shows a considerably higher level of multilateral balancing in its trade in 1938 than in recent years. The reason for this is un-

doubtedly the fact that whatever foreign trade was transacted by the USSR before the war was conducted, presumably in convertible currencies, mainly with countries less inclined towards bilateral trade policies than the USSR itself. Since the war, on the other hand, and the establishment of a Communist bloc, most of the foreign trade of the USSR has been diverted to countries within this bloc, all of whom follow bilateral trade policies similar to those of the USSR itself. The differences in this respect between Soviet and other countries are indeed so conspicuous—and for such obvious reasons—that it seems preferable to exclude the former from any international comparisons. Thus, when a country is termed in this study “highly bilateral,” this should be understood to be based only on comparisons with non-Soviet countries.

Among the other areas, one may distinguish two groups. In one, including the nondollar countries in Latin America, the Overseas Sterling Area, and the Rest of the World, the level of multilateral balancing is relatively high: around 35 per cent of total foreign trade is conducted in a multilateral form. The other group, including the United States and Canada, dollar countries in Latin America, the United Kingdom, and Continental Western Europe, is relatively bilateral: in these areas, multilateral trade forms only about 20 per cent of total foreign trade.

By and large, countries in the former group followed, in the period under consideration, more restrictive, bilateral trade policies than countries in the latter group, whose trade in this period was largely free and was conducted overwhelmingly in fully- or semiconvertible currencies. It does not follow, of course, that countries in the former group would not have realized a still higher level of multilateral balancing in trade had they followed more liberal trade policies. But the contrast between the two groups lends support to the earlier-drawn tentative conclusion, that foreign-trade policies followed by governments are probably not the major determinant of the level of multilateral balancing. This conclusion does not, of course, take into account the effects of an entirely different economic regime, such as that of the Communist countries, on the economy's foreign trade.

It is also interesting to observe a high degree of uniformity, with respect to the level of multilateral balancing, among (non-Soviet) European economies. In all other areas (except, of course, those which consist of only one or two countries), indexes of multilateral balancing of member countries spread over a wide range (for instance, from 12.7 to 45.4 among the 11 nondollar Latin American countries, or from 21.2 to 58.1 among the 16 countries in the Overseas Sterling Area); in Continental Western Europe, on the other hand, the level of multilateral balancing is consistently low: indexes for the 15 countries in this area range only from 19.0 to 28.5. To this phenomenon we shall return soon.

It may be rewarding to inquire whether multilateral balancing tends to be particularly important in each country's trade within a monetary area to which it belongs. This is done by means of separating the index of multilateral balancing of each country into two components, or regional indexes, measuring multilateral balancing in the country's trade within and outside its monetary area. Symbolically, the index of multilateral balancing in the country's trade within the area, to be denoted by T_{ja} , is

$$(2) \quad T_{ja} = 100 \frac{\sum_{s=1}^i \left| \frac{X_{sj}}{X_{\cdot j}} - \frac{M_{sj}}{M_{\cdot j}} \right|}{\sum_{s=1}^i \left| \frac{X_{sj}}{X_{\cdot j}} + \frac{M_{sj}}{M_{\cdot j}} \right|}$$

while the index of multilateral balancing in the country's trade outside its monetary area, denoted by T_{jb} , is

$$(3) \quad T_{jb} = 100 \frac{\sum_{s=k}^n \left| \frac{X_{sj}}{X_{\cdot j}} - \frac{M_{sj}}{M_{\cdot j}} \right|}{\sum_{s=k}^n \left| \frac{X_{sj}}{X_{\cdot j}} + \frac{M_{sj}}{M_{\cdot j}} \right|}$$

where countries 1 to i are country j 's partners in the monetary bloc, while countries k to n lie outside this bloc. T_j , the over-all index of multilateral balancing in the country's trade, is, of course, the weighted average of these two regional indexes.

Table 3 summarizes the two regional indexes for 1954 and 1958, for each of the countries in three monetary areas—The Dollar Bloc, the Sterling Area, and the Continental OEEC Area—which are included in the present investigation; for shortage of space, only the (unweighted) averages for each of the areas are presented.⁸

The findings of Table 3 seem quite surprising; at least, they diverge considerably from what the present author had expected to find. It might be expected that, for each country, multilateral balancing should be more widespread in the trade within its monetary region than in its trade with nonmember countries, since common monetary arrangements facilitate and should be conducive to multilateral balancing of trade among countries. Yet it is observed that in all three regions, the extent of multilateral balancing is lower in the trade of the region's members among themselves than in their trade with the outside world. In 1954, this holds for 34 countries out of the 42 represented in Table 3, and in 1958 it is true for 38 countries. The contrast is particularly glaring when one looks at the Dollar Bloc: Here, the index of multilateral bal-

⁸ The fuller information on which the table is based may be obtained from the author.

ancing is three to four times higher in the trade with outside countries than in the trade within the Bloc. It seems, indeed, that very little multilateral balancing is carried out inside the Bloc. Instead, each of the small trading countries conducts most of its trade with the United States; this trade is highly bilateral, and the small export or import surplus that results serves to finance (or is financed by) deficits (or surpluses) not in the trade with other countries in the region, but in the trade with countries outside it.

To a much smaller extent, this is true also for the Sterling Area: it appears that multilateral balancing is considerably less significant in the trade of the Area's members among themselves than in their trade with nonmembers. Here, too, trade surpluses (deficits) with the central

TABLE 3—INDEXES OF MULTILATERAL BALANCING WITHIN AND OUTSIDE MONETARY REGIONS (Regional Averages)

Monetary Region	1954		1958	
	Within Monetary Region (T_{ia})	Outside Monetary Region (T_{ib})	Within Monetary Region (T_{ia})	Outside Monetary Region (T_{ib})
Dollar Bloc	11.8	46.6	12.6	43.5
Sterling Area	29.0	44.1	27.3	43.5
Continental OEEC Area	19.8	25.3	18.2	26.1

member of the region—the United Kingdom—serve more to offset deficits (surpluses) with nonmember than with member nations. In contrast to the Dollar Bloc, though, a large amount of multilateral balancing which does not involve the region's center sometimes takes place in the Sterling Area.⁹

Even countries belonging to the OEEC—an organization one of whose main functions was specifically the encouragement of multilateral trade among its members—seem to be more bilateral in their trade among themselves than in their trade with other countries. It must be concluded, on this showing, that regionalization of trade cannot count intraregion multilateral balancing of trade as one of its central outcomes. Undoubtedly, common monetary arrangements do facilitate and lead to multilateral balancing, but they are apparently not overly important in comparison with other factors which affect the extent of multilateral trade. This phenomenon conforms, again, to the tentative conclusion arrived at earlier, namely, that policy measures—except when carried to extremes—have probably not been among the major de-

⁹ A similar impression is gained from Philip W. Bell's detailed study of the Sterling Area [1, pp. 296-313].

terminants of the degree of multilateral balancing in the trade of nations.

III. *Common Attributes of Highly Multilateral Economies*

What are the attributes of countries with a relatively high level of multilateral balancing in foreign trade? Examination of Table 1 will reveal a few characteristics that these countries commonly share:

1. Countries with highly multilateral trade are usually exporters of primary goods. Among the 25 countries at the top of the list in Table 1, only two—Japan and, to a lesser extent, Hong Kong—export mainly manufactures. In the rest, primary products constitute an overwhelming majority of exports.

2. These countries are underdeveloped—an attribute which is closely associated, of course, with the export of primary goods. Among the 25 most multilateral countries the only exception is Australia, a highly developed nation (i.e., one with a high per-capita income).

3. The highly multilateral countries are usually small in terms of size of foreign trade. Some of these countries may be regarded as medium-sized, but none could be classified among the “giants” in international trade. The proportion in world exports of the largest trading nation among the highly multilateral countries—Japan—amounted in 1954-55 to 2.6 per cent; and only four other nations in this group—Australia, India, Malaya, and Indonesia—had a proportion of one per cent or more of world exports in these years.

4. As could be gathered from our earlier remarks, none of the highly multilateral countries lies in Europe. The European countries with the highest level of multilateral balancing—Portugal and Spain—occupy, respectively, only the 27th and 28th places on the list, and their indexes of multilateral balancing are about the average for the 60 non-Soviet countries. This must be the result of the fact that European countries do not generally share the other three just-listed attributes. Those that do, besides Portugal and Spain, are only Turkey and Yugoslavia, and these two were in the period under consideration among the closest adherents to restrictive, bilateral foreign-trade policies in the non-Soviet world.

The “typical” multilateral country is thus a small, underdeveloped, primary-goods exporting (and primary-goods producing) economy. A few tentative explanations of this phenomenon may be offered.

One explanation may lie in the fact that such countries are likely to have a high degree of commodity concentration in their foreign trade, particularly in their exports.¹⁰ And, as has been suggested in a well-

¹⁰ See [3].

known League of Nations study, "... the concentration of trade ... prevents it from being bilateral; for the countries whose exports are largely concentrated on one or a few commodities are not likely to require, and do not require, the particular products of other countries in exactly the proportions in which these countries require their products. The same is true even in trade between countries with a more diversified trade; it is only less obvious."¹¹

Another reason for a relatively high level of multilateral balancing among exporters of primary goods is that, in the trade in primary goods, very often an "intermediary" appears between the country of origin of the goods and the countries of final destination; goods are sent abroad to a country in which they are slightly reprocessed, and from which they are further exported to third countries. When the intermediary—as well, of course, as the country of origin—is an underdeveloped, primary-goods exporting country, this process is liable to create a high degree of multilateral balancing in both the country of origin and the intermediary.

This procedure is probably most conspicuous in the case of oil. Unfortunately, most large exporters of oil are absent from this study—sometimes (as in Iraq) precisely because the final destination of their exports could not be ascertained. But a few countries which are included in the study may serve to illustrate this point: The territory of the Netherlands Antilles, which has by far the highest level of multilateral balancing in its foreign trade, fulfills the function of the intermediary; its imports consist mostly of Venezuelan crude oil, and it exports solely refined oil. It could hardly be expected, of course, that the bulk of the refined oil should be shipped back to Venezuela. Hence a high level of multilateral balancing in the trade of both the Netherlands Antilles and of Venezuela.¹² The territory of Trinidad and Tobago is in a position similar to that of the Netherlands Antilles, only less extreme. Another raw material which may provide an example of this procedure is rubber. Large quantities of rubber are shipped from Indonesia to Malaya, where the rubber is processed and re-exported. This helps to make both Indonesia and Malaya highly multilateral countries.

Further reflection upon this process will lead to an observation of a

¹¹ [7, p. 8]. In an earlier League of Nations study, a similar idea was expressed in the reverse form: "Certain countries with a highly specialized production and an export which is accordingly primarily dependent upon the sale of a small number of articles ... are greatly dependent upon triangular trade, as they often cannot dispense of enough of their products in certain countries to offset their payments due there on account of goods imported or the services of loans" [6, 1933, p. 69].

¹² Venezuela is excluded from the present study due to its large export surpluses. Had this factor been disregarded, Venezuela's index of multilateral balancing would have been found to be 43.7 in 1954-58.

more general nature: Highly developed countries, exporting mainly manufactures, have goods to offer to both underdeveloped economies, from which they buy foodstuffs and raw materials, and to other developed countries, from which they buy mainly manufactured goods. The trade relations of a highly developed economy with countries of both types may thus, potentially at least, be bilateral. An underdeveloped economy, on the other hand, when it happens to buy large quantities of primary goods (mainly foodstuffs, but also raw materials) from another underdeveloped country, cannot usually offer in exchange goods which the partner country demands. Trade relations of under-

TABLE 4—LARGE TRADING NATIONS AS AGENTS OF MULTILATERAL BALANCING, 1954-58
(in per cent)

Country	Proportional Contribution to Multilateral Trade in Twenty Countries (1)	Proportion in World Trade (2)
United Kingdom	12.7	10.8
United States	11.5	16.4
Japan	5.9	2.9
Germany	4.9	7.5
France	3.3	5.6
Netherlands	3.2	3.5
Belgium-Luxembourg	2.8	3.2
Canada	2.8	5.4
Italy	2.3	2.9
Total	50.4	59.2

developed countries among themselves are therefore less likely to be bilateral than either the trade of developed countries among themselves, or the trade between developed and underdeveloped economies.

Let us, finally, pose the following question: What countries fulfill the role of "agents of multilateral balancing," in the sense that it is deficits and surpluses in trade with these countries which enable others to maintain multilateral trade?

One may naturally expect the largest trading nations to be also the most important agents of multilateral balancing. In Table 4, attention is focused on the position of the large trading countries (which are defined, for this purpose, as countries whose proportion of either world exports or world imports exceeded 3 per cent in 1954-58). The table presents the share of the large countries in the multilateral trade of the 20 countries with highest level of multilateral balancing—the top third of the 60 non-Soviet countries. This is shown in column (1), which

represents the (unweighted) average proportional contribution of the (positive or negative) balances of trade with each of the large nations to the indexes of multilateral balancing of the 20 highly multilateral countries.¹³

It is not surprising to find that the United Kingdom and the United States are the most important agents of multilateral balancing. The apparent contradiction between this fact and the finding that these two nations are amongst the most bilateral in the non-Soviet world disappears when one recalls that the highly multilateral countries are usually small traders: the combined proportion of the 20 most multilateral countries in world exports and imports amounted in 1954-58 to 12.6 per cent—less than the proportion of the United States alone, and only slightly more than that of the United Kingdom. Thus, the small multilateral fraction in the trade of the United States and the United Kingdom is sufficient to “support” a high level of multilateral balancing in the trade of many small countries.

In general, however, the proportional contribution of the large countries to multilateral balancing is lower than the proportions of these countries in world trade (exports and imports), which are shown in column (2) of Table 4. This is true both for the whole group of the large countries and for each of them separately, save the United Kingdom and Japan.¹⁴ In comparison with the country's share in world trade, Japan is by far the most important agent of multilateral balancing in large trading nations: Japan's contribution to multilateral balancing in the trade of highly multilateral countries amounts to more than twice its proportion of world trade.¹⁵ Thus Japan, following the United Kingdom and the United States, is the third most important agent of multilateral

¹³ Thus, for instance, the figure shown in column (1) for the United States is

$$\sum_{j=1}^{20} \frac{\left| \frac{X_{uj}}{X_{.j}} - \frac{M_{uj}}{M_{.j}} \right|}{\sum_s \left| \frac{X_{sj}}{X_{.j}} - \frac{M_{sj}}{M_{.j}} \right|} \quad \text{20}$$

where country j is any of the 20 “highly multilateral” countries, X_{uj} and M_{uj} stand, respectively, for this country's exports to and imports from the United States, $X_{.j}$ and $M_{.j}$ for its exports to and imports from any country, s , and $X_{.j}$ and $M_{.j}$ for its total exports and imports. The figure is an average of the results derived by this formula for 1954 and 1958.

¹⁴ However, the “world totals” of exports and imports, by use of which the figures in column (2) were arrived at, exclude the trade of a few countries—mainly those belonging to the Soviet orbit—while trade with all countries was considered in constructing the indexes of multilateral balancing. A comparison of column (1) with column (2) thus involves a slight upward bias of the latter.

¹⁵ The figure for Japan in column (1) excludes, of course, the contribution of countries to the index of multilateral balancing of Japan itself, which is one of the 20 “highly multilateral” countries.

balancing. Since Japan's trade is only moderately large, this could obviously not have been possible without a high level of multilateral balancing in the trade of Japan itself.¹⁶

Among the smaller traders, India is in a position similar to Japan's. With a proportion of world trade of only 1.6 per cent, India's proportional contribution to multilateral trade in the highly multilateral economies amounts to 3.7 per cent. Outside the largest trading nations, India is thus the only important agent of multilateral balancing in world trade.

REFERENCES

1. P. W. BELL, *The Sterling Area in the Postwar World*. London 1956.
2. F. HILGERDT, "The Approach to Bilateralism—A Change in the Structure of World Trade," *Svenska Handelsbank Index*, Aug. 1935, 10, 175-88.
3. M. MICHAELY, "Concentration of Exports and Imports: An International Comparison," *Econ. Jour.*, Dec. 1958, 68, 722-36.
4. ———, "The Shares of Countries in World Trade," *Rev. Econ. Stat.*, Aug. 1960, 42, 307-17.
5. LEAGUE OF NATIONS, *International Trade Statistics*, various issues.
6. ———, *Review of World Trade*, Volumes of 1933, 1934 and 1935.
7. ———, *The Network of World Trade*. Geneva 1942.
8. UNITED NATIONS, *Yearbook of International Trade Statistics*, various issues.
9. ———, INTERNATIONAL MONETARY FUND, and INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT, *Direction of International Trade*, various issues.

¹⁶ In general, the degree to which a country serves as an "agent of multilateral balancing" is a reflection of three factors: the size of the country's trade, the level of multilateral balancing in its own trade, and the size of trade of the country's partners to international trade. The larger the first two, and the smaller the third magnitude, the larger will the country's role as agent of multilateral balancing be. Thus, the United Kingdom is a more important "agent" than the United States, despite the latter's larger trade, partly because the United Kingdom's trade is slightly more multilateral than that of the United States, but mainly due to the fact that the United Kingdom trades with smaller countries. The size of partners to international trade is discussed in [4, pp. 314-16].

The figures in column (1) of Table 4 also reflect, of course, some element of chance, since they are based on trade with the 20 "highly multilateral" countries alone.

A COMPARISON OF U.S. AND SOVIET INDUSTRIAL OUTPUT

By ALEXANDER TARN AND ROBERT W. CAMPBELL*

In any effort to gauge the relative economic strength of the United States and the Soviet Union, a comparison of industrial output is of central importance. Industry is the supplier of those outputs that are of greatest concern in the current international power struggle—it is the source of the most important inputs into the military program, investment, and foreign economic assistance.

A confusing variety of statements on the relative size of U.S. and Soviet industrial output have been published in recent years. Warren Nutter has said that Soviet industrial output was about 25 per cent of the U.S. level in 1955 [23, p. 112], while Allen Dulles of the Central Intelligence Agency asserted in 1959 that the correct figure was 40 per cent of the U.S. level [22, p. 4]. Dulles' laconic statement gives no clue as to the method of analysis underlying his assertion, although it is probably based on careful research. Nutter explains his method, but it is an extremely indirect one that prompts suspicion because it compounds two kinds of index-number ambiguities. His approach is to project the alleged relative standing in 1913 to the present by means of his indexes of growth for each country.

Another analyst has concluded that Soviet industrial output in 1956 was about 48-51 per cent of the U.S. level, depending on weighting systems and estimating procedures [13]. His method involves the comparison of a number of different outputs in physical terms, and then the aggregation of these with various kinds of weights. The total number of physical output comparisons on which this result was based was, however, rather small—51 ratios in all.

The Russians have not been content to leave the question of relative industrial size to the bourgeois economists. According to V. I. Starovskii (head of the Central Statistical Administration), his agency and several other research organizations are engaged in both methodological and empirical work on comparisons of industrial output in the two countries [11]. In the same article he reports that these calculations show that

*Tarn is an independent student of the Soviet economy and Campbell is associate professor at Indiana University. The authors wish to acknowledge the helpful suggestions of Gregory Grossman at an early stage of their research.

Soviet industrial output in 1959, whether in gross or net terms, in rubles or in dollars, was about 60 per cent of U.S. output. This insensitivity to weights, plus a statement that the ruble comparison showed a higher ratio than the dollar comparison, makes one curious about his method, which however is not elaborated. Moreover, other Soviet researchers have published results far out of line with Starovskii's 60 per cent.¹

The purpose of the present article is to present the results of a fairly detailed approach to the problem, honoring the professor's admonition to "show all work and justify your answer."²

I. *The Method*

The comparison involves a combination of two approaches. For branches of industry other than engineering (we mean by this term the sector which the Russians call "machine-building and metal-working"—*mashinostroenie i metalloobrabotka*) relative output is estimated on the basis of physical production data. The first step is to determine as many physical output relatives as possible.³ These are then aggregated by means of U.S. value-added weights. Concretely, for each class of industries of the U.S. *Census of Manufactures* (mostly at the four-digit level) physical output relatives showing USSR as per cent of U.S. are determined for the main commodity or commodities in that class. For each class, Soviet industry is then assigned a value-added figure in dollars equal to U.S. value added times the output relative. When these value-added figures in dollars are aggregated for each side and compared, the resulting ratios constitute averages of the physical output relatives, weighted by U.S. value added.

As might be expected, this approach encounters difficulties in application. There arise problems of the comparability of quality of the product in the two countries, heterogeneity of output within four-digit classes and its susceptibility to meaningful measurement in physical units, coverage of the class by the products compared, availability of production data or of useful surrogate measures for imputation, and so on. The impact of these problems varies considerably from industry to industry. Accordingly the separate industry comparisons are classified

¹ According to [10, p. 86] the output of Soviet metal-working and machine-building was about 40-44 per cent of the U.S. level in 1958. Since the source also says that the share of machinery production in total output in each country is about one-third, this is clearly inconsistent with the conclusion that total industrial production is 60 per cent of U.S. industrial production.

² Not all the detailed calculations can be presented here, but they are included in a mimeographed appendix available from the authors on request.

³ We were able to find almost 200 such ratios. The sources from which the output information is taken, and the methods of estimating the ratios are explained in the mimeographed appendix.

into three categories according to our subjective estimate of their reliability. Category I embraces the comparisons that appear to be most reliable, those in Category III the least satisfactory.

The scope of the comparison has been determined essentially by the Soviet concept of industry. Thus the mineral industries are included in addition to manufacturing. Electric power generation, however, is not included, even though it falls within the Soviet industry concept. There are undoubtedly many minor differences in the inclusion boundary as, for example, the inclusion of fisheries in the Soviet case, but their omission in the U.S. case. This choice regarding scope was dictated by a desire to make the comparison as broad as possible, but also by the fact that some Soviet data which pertain to this scope are employed in the estimation of engineering output.

The four-digit classes have also been aggregated into intermediate-size groupings, such as "food and tobacco industries," and "ferrous metallurgy." In defining the borders of these groupings the Soviet industrial classification has been followed rather than the U.S. Standard Industrial Classification.⁴ The reason for this decision is again that for the estimation of engineering output Soviet data conforming to these groupings are employed. In any case the Soviet industrial classification is close enough to the U.S. that the groupings seem perfectly familiar, and are relevant to a number of questions to be asked further on.

The comparison is between Soviet output in 1955 and U.S. output in 1954. The availability of the information of the *Census of Manufactures*, and *Census of Mineral Industries* for 1954 determined the choice of year for the United States. The choice of 1955 for the USSR is based on similar expedencies—of the years in the general neighborhood of the U.S. side of the comparison, 1955 is the one for which the most abundant data on Soviet industrial output has been released. This difference in the years being compared would be of little importance except for the fact that 1954 was a recession year in the United States, but account will be taken of this fact.

For engineering industry, an approach based on comparison of output of individual commodities is not feasible, because of the heterogeneity of the output of this branch, and because of the lack of production information on many items, particularly military items. Therefore several other approaches have been employed to arrive at a range of plausible magnitudes for value added in Soviet engineering industry. The one we consider most reliable involves comparison of motive power in U.S. and Soviet industry. First, the relationship of value added to motive power is compared for the two countries in all those industry

⁴A fairly recent description of the Soviet industrial classification scheme is given in [12, pp. 267-75].

groups for which the first method has given a relative output ratio. As might be expected, in the more modern branches, and those with relatively high priorities in Soviet planning (petroleum, ferrous metals, and chemicals, for example) the ratio of motive power to value added is not far different from the ratios found in the United States. We assume that the same kind of technological policy has been followed in the engineering industry, and therefore feel justified in estimating value added in Soviet engineering industry by analogy with the ratio of value added to motive power in U.S. engineering industry.

Essentially the same use can be made of labor productivity. For each industry group value added per worker is compared as between U.S. and Soviet industry, and Soviet value added in engineering industry is estimated by analogy with relative labor productivity in those branches which would seem to be most like engineering as regards modernity, capital supply and technological history. Still other guides are the relative size of the machine tool stock in the two countries, and the size of the engineering industry relative to the rest of industry as shown by Soviet industrial statistics. All these approaches are only oblique methods, of course, but their reasonableness is supported by the fact that they indicate a fairly narrow range for the size of Soviet engineering output relative to U.S. engineering output.

II. *The Results*

A. *Nonengineering Industries*

A summary of our results by industry group and by reliability category is given in Table 1. More detailed ratios for four-digit classes are shown in an Appendix. As the table shows, the ratio of Soviet to U.S. output for nonengineering industries is about 44 per cent. There is, however, great variation in the ratio from industry group to industry group, with the ratios for groups ranging from 17.9 per cent for printing and publishing to 83.4 per cent for construction materials. For four-digit classes the variation is still greater (see Appendix). These differences are more or less what one would expect; the Russians are closest to the U.S. level of output in producers' goods industries, especially in those branches connected with the provision of investment goods. Among the producers' goods industries, they are farthest behind in fuel. The relatively low standing in this industry is explained by the fact that in the United States this is to a considerable extent a consumer goods industry producing fuel for automobiles. If petroleum is eliminated from the comparison, the production ratio for fuel rises to 54.6 per cent instead of the 31.4 per cent shown in Table 1 for the fuel industry as a whole.

The relatively low standing of another industry, chemicals, is also no surprise. The Russians themselves have emphasized that they have been very backward in developing this branch.

Of the two industries producing consumer goods the production ratio

TABLE 1—VALUE ADDED IN U. S. AND SOVIET NONENGINEERING INDUSTRIES, BY INDUSTRY GROUP
(millions of dollars)

Industry Group	USSR				U.S.	Ratio of Soviet to U.S. Total (per cent)
	Category I	Category II	Category III	Total	Total	
Food industry	7,175	1,201	68	8,444	15,739	53.6
Light industry	2,507	866	303	3,676	11,683	31.5
Lumber, woodworking, paper	2,084	2,220	—	4,304	9,770	44.0
Publishing and printing	1,124	—	—	1,124	6,266	17.9
Chemical and rubber-asbestos	730	1,452	1,571	3,753	10,685	35.0
Mineral construction mat.	1,877	1,326	376	3,579	4,293	83.4
Ferrous metals	5,297	516	589	6,402	8,646	74.0
Nonferrous metals	—	1,130	16	1,146	2,714	42.2
Fuel	3,352	162	34	3,548	11,298	31.4
Miscellaneous	70	—	611	681	2,860	23.8
Total	24,216	8,873	3,568	36,657	83,954	43.7

is higher for food than for light industry. The very low ratio for light industry is much influenced by the extreme underdevelopment of the apparel branch in the USSR. Without apparel, the production ratio for light industry would be 46.0 per cent. The difference between these two branches reflects, of course, the fact that food is more of a necessity than clothing. Within the food group the standing is quite heterogeneous. These are a number of commodities produced in larger quantities in the USSR than in the United States—grain mill products, fish, bread, wine and brandy, distilled liquor, and others. But there are a number of industries where Soviet output is less than 10 per cent of ours.

Another feature of the comparison is the nature of the results as between categories of reliability. The Soviet-U.S. production ratio is 53.0 per cent for the industries in Category I, 35.7 per cent for Category II, and only 26.6 per cent for Category III. This is what one might expect on the basis of the following considerations. The items of Category I are basic standard items produced on a large scale. They are the ones which the Russians consider most important, and therefore those for

which they keep most careful statistical records. Since outputs in these industries are relatively high, the Russians do not hesitate to release information concerning them. Items in Categories II and III are more likely to be luxury items, or "modern" items, the production of which the Russians have not yet introduced or mastered. Hence they publish less information, both because these are less vital commodities from their point of view, and because they prefer to publicize those areas where their comparative performance is best. Yet there are a great many items in Category III, the output of which we have treated as negligible. If information were found on the output of these, it might turn out that they are not so negligible as our estimating methods have made them, and the total ratio for all industry might rise appreciably.

Of our total of \$36,657 million for value added in Soviet nonengineering industries, some 66 per cent is accounted for by Category I, covering output for which we consider the available information and the resulting comparison most reliable. Another 24 per cent is accounted for by industries in Category II, and only 10 per cent by those in Category III. Thus even under the extreme assumption that the Russians really had no output of goods in Category III, the over-all ratio would still be 39.4 per cent.

B. Engineering Industry

The data available on physical output for engineering industry, though quite extensive, cover only a small part of the output of this industry. On the basis of several kinds of indirect evidence, it is estimated that the output of Soviet engineering industry would be a little less than \$30 billion of value added with a possible error of \$2 or \$3 billion in either direction. Value added in U.S. engineering industry in 1954 was \$44 billion, and so a Soviet output of \$30 billion would mean a ratio of 68 per cent. The evidence for this conclusion is as follows.

1. *Labor productivity approach.* Table 2 lists value added and the number of workers employed for both the United States and the Soviet Union in the nonengineering industry groups already discussed. The resulting relative labor productivity figures seem quite plausible in the light of what is known about the relative performance of different branches of industry. There is great heterogeneity in output per worker, with the ratios ranging from about 14 per cent in fuels to 78 per cent in primary metals. The figure for primary metals, however, is probably rather too high as a result of our inability to give identical scope to the figures for primary metals in each country. In neither country are foundries a clearly separate branch of industry. It is estimated in the Census that in the United States some 70 per cent of castings are produced in establishments classified as foundries and included in the fer-

TABLE 2—VALUE AND VALUE ADDED PER WORKER IN U.S. AND SOVIET NONENGINEERING INDUSTRIES, BY INDUSTRY GROUP

Industry Group	Production Workers (thousands)		Value Added (million dollars)		Value Added per Worker (dollars)		Soviet-U.S. Ratio
	U.S.	USSR	U.S.	USSR	U.S.	USSR	
Food industry	1,270	1,500	15,739	8,444	12,392	5,629	45.4
Light industry	2,369	2,822	11,683	3,676	4,931	1,303	26.4
Lumber, woodworking and paper	1,309	2,440	9,770	4,304	7,463	1,764	23.6
Printing and publishing	500	133	6,266	1,124	12,532	8,451	67.4
Chemical and rubber-asbestos	725	531	10,685	3,753	14,730	7,067	48.0
Mineral construction materials	455	979	4,293	3,579	9,436	3,655	38.7
Ferrous and nonferrous metals	1,108	946	11,360	7,548	10,252	7,978	77.8
Ferrous and nonferrous metals without foundries	862	946	9,544	6,027	11,071	6,371	57.5
Fuel	588	1,278	11,298	3,548	19,214	2,776	14.4
Miscellaneous	344	565	2,816	662	8,167	1,172	14.3
Engineering	4,295	5,146	44,157	—	—	—	—

The data on value added for both the U.S. and the USSR are taken from the previous tables. For the U.S. the number of workers in each industry is taken from the U.S. Censuses of Manufactures and Mineral Industries. It refers to the Census concept of "production workers." For the Soviet Union, the number of workers in each industry was derived by distributing an estimated total of *rabochie* in the several categories of Soviet industry (state industry, handicraft coops, collective farms, and enterprises of cooperative trade) according to a percentage distribution of employment of *rabochie* by branch, given in [19, p. 24]. The estimated total of 16.6 million *rabochie* consists of 14.275 million in state industry [17, p. 44], 1.6 million members of handicraft cooperatives (*idem*), 400 thousand workers in collective farm industry, and 325 thousand in industrial enterprises of consumers cooperatives. The figure for collective-farm industrial workers is simply taken as equal to the number of collective farm industrial enterprises (given in [17, p. 42]). The number in enterprises of consumer cooperatives is estimated on the assumption that output per worker in these enterprises was the same as in handicraft cooperatives, and using the relative size of output in industrial coops and enterprises of consumer coops [17, p. 42].

The Soviet concept of *rabochie* and the Census concept of "production workers" do not delimit exactly comparable groups within total employment [20, p. 100]; but for the kind of aggregative comparison employed here, this difference is probably not important. In any case we are less concerned with relative labor productivity between the two countries per se, than with using it to estimate the output of Soviet engineering industry.

rous metals industry. The rest are produced in establishments classified in other parts of industry because of their primary specialization. In the Soviet Union, on the other hand, most foundries are part of machinery enterprises [3, p. 218],⁵ though the Soviet industrial classification lists do show cast-iron pipe and fittings as part of the ferrous metals

⁵ According to [2, p. 110], in 1955, 65-70 per cent of all castings were produced in machinery plants.

industry [12, p. 268]. If foundries are completely removed from the U.S. side of the comparison, but only foundry output is excluded from the Soviet side (on the assumption that the employment figure already excludes foundry workers), the relative labor productivity ratio drops to 57.5 per cent. Since there are some foundry workers included in the Soviet ferrous metal employment figure, the true ratio would be somewhat higher, perhaps as much as 60 per cent.

The important question is which of these industries is likely to be most similar to engineering industry in its relative labor productivity. If the industry groups which represent mostly production of primary raw materials are eliminated (fuel, construction materials and lumber and paper) as both inefficient in the USSR and technically dissimilar to engineering, a range of USSR-U.S. labor productivity ratios from 26 per cent for light industry to 67.4 per cent for printing and publishing is obtained. (The figure of 77.8 per cent for ferrous metals is ignored because of the considerations mentioned above.) It seems likely that relative labor productivity in Soviet engineering industry is probably somewhere within this range.

There is reason to believe that the high ratio in printing and publishing is largely caused by the relatively low labor productivity in this industry in the United States, which has a large proportion of small establishments engaged in commercial printing. Moreover, even if printing and publishing were very efficient in the USSR, this condition is not likely to apply to a much larger and more diversified engineering industry. Thus it will probably be fairly safe to eliminate the labor productivity ratio for printing and publishing as a useable index of labor productivity in Soviet engineering.

At the other extreme it is quite unlikely that labor productivity in Soviet engineering is in the same class with that in light industry or even with that in the food industry, which have been given comparatively little attention in the USSR, and in which labor productivity has grown much more slowly than in producers' goods industries, such as chemicals, primary metals, and engineering industry.

Therefore, it is probably justifiable to use the productivity range of the industries producing mainly the means and materials of production, which is between 48 per cent for the chemicals and rubber-asbestos industry and about 60 per cent for primary metals, as more likely to represent the range of labor productivity to be expected for engineering industry. In absolute terms the range for Soviet engineering output is then between \$26 and \$31 billion. We hesitate to draw more precise conclusions from this method except to say that it is likely that labor productivity in engineering industry is closer to that in primary metals than to that in chemicals and rubber. This inference is based on the

fact that until recently the chemical industry has been a relatively low-priority industry and was probably relatively backward in 1955 compared to primary metals, and probably also to engineering production.

2. *Motive power approach.* In modern industry an overwhelming proportion of work is done by means of mechanical and electrical power installations, and power capacity of industrial equipment is thus a good indicator of industrial capacity. The Russian statistics on power capacity show prime movers separately for those used to drive generators and those not used to drive generators, the capacity of electric motors, and capacity of other electrical installations such as electrolytic baths, electric furnaces, welding equipment, lighting and so on. The U.S. Census shows data separately for prime movers used to drive generators and prime movers not used to drive generators, and capacity of electric motors separately for those driven by purchased energy and those driven by energy generated by the establishment itself. The broadest of the concepts that can be developed from the Russian figures would probably be the best over-all indicator, i.e., the power of prime movers not used to drive generators, plus the power of all installations powered by electricity. But no combination of the U.S. figures is as broad as this, and it is therefore necessary to settle for a narrower concept—"motive power"—defined as the capacity of prime movers not used to drive generators plus the capacity of all electric motors.⁶ Table 3 compares the ratio of value added to motive power for all the industry groups for which we have data for the two countries.

Again there is a wide range of variation in the ratios. As one searches for explanations for these variations it becomes clear that the relationship of output to power capacity is very complicated. There are problems of the scope of power equipment included in the statistics of each country (e.g., the inclusion or exclusion of highway-type vehicles), variation in the internal composition of an industry group between the United States and the USSR, and the degree of utilization of capacity. In Table 4 adjustments have been made for these differences in cases where they are most important. Details are given in the notes to the table.

The general effect of these adjustments is to narrow the range somewhat, but in the end there is still a disconcerting range of ratios, from more than 100 in the case of ferrous metals, to as low as 50 in the case of coal mining. Our ultimate question concerns the probable position occupied by the Soviet machinery industry on this spectrum, and an an-

⁶It is possible on the basis of indirect evidence to estimate for U.S. industries the comprehensive concept of power equipment. We have done so, but the procedure is complicated and involves several uncertainties. Since the results are not in conflict with those based on motive power alone, the calculation will not be produced or summarized here.

TABLE 3—RATES OF VALUE ADDED TO MOTIVE POWER IN U.S. AND SOVIET NONENGINEERING INDUSTRIES, BY INDUSTRY GROUP

Industry Group	United States			USSR			USSR-U.S. Ratio (per cent)
	Value Added (million \$)	Motive Power (thousand KW)	\$/KW	Value Added	Motive Power	\$/KW	
Coal mining	1,615	5,622	287.2	1,546	5,837	264.9	92.2
Petroleum and gas extraction	7,674	11,769	652.1	1,568	2,076	755.1	115.8
Petroleum refining	1,901	4,679	406.2	316	874	361.5	89.0
Ferrous metals	8,646	18,191	475.3	6,402	8,239 ^a	863.3	181.6
Food industry	15,739	6,079	2,587.1	8,444	3,194	2,644	102.1
Light industry ^b	6,536	3,503	1,865.8	3,017	2,139	1,410	75.6
Chemicals, rubber-asbestos	10,685	11,383	938.7	3,753	2,999	1,251	133.3
Lumbering, wood-working and paper	9,770	10,471	933.1	4,304	4,851	887.2	95.1
Mineral construction materials ^c	3,598	3,592	1,000.2	3,579	2,758	1,297.7	130.0
Engineering	44,157	18,049	2,446	—	11,569 ^a	—	—

Notes: The figures for USSR motive power are from [19].

^a Because something like 10 per cent of Soviet ferrous metals output is accounted for by machinery enterprises, 824 thousand KW of the power shown in [19] for machinery has been transferred to ferrous metals, i.e., enough to equal 10 per cent of the power for ferrous metals shown in this table.

^b The Census does not give figures for motive power in the apparel industry, so apparel has been omitted entirely from the U.S. side of the comparison, and from the Soviet output figure.

^c The ratio for this group has been figured for a sector without sand, gravel and crushed stone on the assumption that the Soviet figures for motive power in this industry group exclude such establishments. It is stated in [19, p. 5], that the power figures given there do not include those for subsidiary enterprises; and it seems likely that most of the enterprises in sand, gravel, and crushed stone have that status in the Soviet Union. In any case, without that interpretation the Soviet-U.S. ratio of value added to motive power seems impossibly high.

swer requires analysis of the factors explaining the divergence of the ratios. Even a first inspection of past trends, and of the heterogeneous ratios within our industries suggests that any interpretation involves the interplay of the following important considerations:

(a) The output-power ratio is probably closely related to mechanization and capital intensity; and the relatively low ratio of power capacity to output for a number of Soviet industries reflects their restricted access to capital. Such branches as food processing, light industry, wood-working and paper are low-priority industries in the Soviet scheme of things, and have not been allotted the capital that would be needed to modernize and mechanize them.

(b) On the other hand, the latitude for exercising choice of capital in-

TABLE 4—ADJUSTED RATIOS OF SOVIET TO U.S. RATIOS
OF VALUE ADDED TO MOTIVE POWER

(per cent)

Ferrous metals	101.5
Petroleum refining	75.6
Chemicals, rubber, asbestos	103.0
Light industry	95.8
Petroleum and gas extraction	60.1
Food and tobacco	92.7
Woodworking and paper	182.6
Coal mining	58.5
Mineral construction materials	130.0

Ferrous metals. The ratio has been adjusted to eliminate foundries and to correct for underutilization of capacity. (1) We earlier treated foundries as part of the ferrous metals industry in line with U.S. organization and statistical practice. In the Soviet Union, however, it appears that castings are produced mostly by machinery enterprises, and the power figure reported for the iron and steel industry therefore covers only a few foundry operations. Hence, in this table the comparison refers only to ferrous metals without foundries. (2) We take 71 per cent as the operating rate of the U.S. iron and steel industry for 1954. The AISI gives 71.6 per cent for blast furnaces and 71 per cent for steel-making.

Petroleum refining. This figure is adjusted only for the low U.S. operating rate of 85 per cent of capacity, given in *Minerals Yearbook*.

Chemicals, rubber, asbestos. This figure has been adjusted for the different importance of organic versus inorganic branches in the two countries. We have reweighted the U.S. output-power ratios in accordance with Soviet structure, so as to eliminate the difference in structure as an explanation for the difference in U.S. and Soviet output-power ratios.

Light industry. Adjustment here involved reweighting to eliminate the effect of differences in intrabranch structure.

Lumbering, woodworking and paper. This ratio is adjusted for (1) differences in structure, and (2) to eliminate logging. It seems highly unlikely that the U.S. census concept of logging camps is as comprehensive as the Soviet definition of the same activity. This is suggested by the very large motive power in Soviet logging relative to that in the United States. In any case the U.S. Census data on power does not include highway vehicles, whereas the Soviet figures apparently do. So for the comparison in this table we have narrowed the sector to eliminate logging entirely.

Petroleum and gas extraction. The Census of Mineral Industries includes highway-type vehicles in its figures for power equipment. It is not clear whether the Russian data do or do not include them, but even if they do, it seems unlikely that such vehicles would amount to so high a proportion of the total as they do in the United States (i.e., 27 per cent). Hence we have simply omitted this type of power from the U.S. side, though this may result in a Soviet to U.S. ratio of output to power that is slightly too low.

Food and tobacco. This ratio has been adjusted for differences in structure.

Coal mining. This figure has been adjusted for the low operating rate of the U.S. coal industry as given in [21, p. 730].

Mineral construction materials. The ratio for this industry has been figured for a sector without sand, gravel, and crushed stone, as explained in the notes to Table 3. The ratio for this narrower scope has also been adjusted in the present table for differences in internal structure.

tensity or power intensity probably varies from branch to branch. (We can think either of technical impossibility of substitution or, probably more realistically, of differences in the second derivatives of production functions.) In well-drilling, for instance, the bulk of the power is used

in lowering and raising the string, turning the bit and pumping the mud, and the possibilities for replacing mechanical power with labor in these processes are probably very limited (or fantastically expensive). The building materials industry, on the other hand, involves a much more heterogeneous collection of processes, including many traditional branches, such as brickmaking, which can be continued on a basis of low power intensity. Thus even if there are other processes, such as cement production, where the possibilities of substitution are less, the over-all power intensity in the industry could be kept far below U.S. practice.

(c) A glance at trends in power capacity and output reminds one that there are power-saving as well as power-using innovations. Hence the Soviet output-power ratio reflects not only the degree to which power has been substituted for human effort, but also the extent to which Soviet industries have kept up with U.S. technological change. In U.S. petroleum refining, for instance, there was before the Second World War a period when growth of power capacity lagged behind the growth of output capacity. For the Soviet case there is no comparable period, suggesting that the low output-power ratio in this industry in the Soviet Union may result from Soviet failure to adopt power-saving innovations to the same extent as in the United States.

The same explanation may also rationalize the low output-power ratio in the coal industry. The Soviet coal industry presents a paradox. Labor productivity is extremely low compared to that in the United States, a phenomenon which one might explain by the very low power per worker in Soviet coal mining. On the other hand, the output-power ratio is lower in the Soviet Union than in the United States. If one could imagine the Soviet coal mining labor force appropriately decimated, we might argue that output would stay the same, and that labor productivity would rise to U.S. levels, an outcome that would be "warranted" by a power-per-man ratio comparable to the U.S. ratio. One doubts that this easy prescription for raising Soviet labor productivity in coal mining would work. The obvious resolution of the paradox is that the large motive power possessed by Soviet coal mining must be dispersed among a large labor force in small tools and machines. In a more abstract idiom, it is embodied in production functions that are certainly labor intensive, and probably also very wasteful of power, as suggested by the low output-power ratio.

Where would machinery fall in the comparison of Soviet-U.S. output-power ratio? Would it resemble light industry or coal? Our inclination is to say it would hold an intermediate place with a ratio of, say, 90-100 per cent. The reasoning is that it is a high-priority industry which has not therefore been stinted on capital and power capacity, but at the same time its technology is relatively flexible, allowing more sub-

stitution of labor for power than, say in ferrous metals. This is on the basis of the now familiar argument that there are several distinct technologies employed in the machinery industry; some processes the Russians have mechanized highly, but others have been left technologically backward, such as materials-handling and foundries [3] [5] [6].

An obvious counterquestion is whether machinery might not be more like coal mining and petroleum in its comparative output-power ratio. It is an industry where the Russians strive for high labor productivity and modernity, and one wonders whether Soviet planners might not have flooded the machinery industry with a surfeit of inefficiently used power. We are skeptical of this argument since it finds no corroboration in the power and output trends for this industry in the two countries. Machinery output seems to have grown faster relative to power in the Soviet Union than in the United States.⁷ Hence it would be difficult to make out a case for the view that the Russians have failed to offset power-for-labor substitution by power-saving innovations to the extent we have in the United States.

In any case, the assumed ratio of 90-100 per cent, adjusted for the fact that the U.S. machinery industry worked at far less than capacity in 1954 (according to the FRB indexes output dropped by 9.7 per cent from the peaks reached in 1953) implies a value added for the Soviet machinery industry of \$28-\$31 billion.

3. *Machine tool stocks.* As a third bit of evidence, consider the relative size of the machine tool stocks in the two countries shown in the following tabulation [15, pp. 4-5] [18]:

	Metal-Cutting Machines	Metal-Forming Machines
United States (1953)	1,900,000	699,000
Soviet Union (March, 1955)	1,699,000	345,000

The Russians thus had almost 90 per cent as large a stock in metal-cutting machines, and about 65 per cent as large a stock in metal-forming machines. If the U.S. stock were taken as of 1954 rather than 1953, it might be slightly larger, but not appreciably; the 1958 inventory of metalworking equipment showed an actual decline in total numbers in the United States between 1953 and 1958. It seems to be generally agreed that the Soviet machines are far less productive than U.S. machines, because they have smaller motor capacity, are less specialized, the less productive types of machines are more important in the total,

⁷ Moorsteen's index of machinery output (as given in [8]) has been used here rather than the official one; and it could be argued that Moorsteen's index, because of late-year weights and omission of armaments, really understates Soviet machinery growth.

carbide cutting tools are less extensively used, and there is a smaller proportion of automatic equipment.⁸ Despite adjustments for these differences, however, the ratios of Soviet to U.S. machines are high enough to make plausible the estimate of a Soviet engineering output some 60 per cent as big as that of the United States.

4. *Ratio to all industrial output.* As a final check on the estimate for engineering output our calculation of its size relative to all industrial output can be compared with Soviet statements on industrial structure. According to our results, Soviet engineering constitutes from 43.3 to 45.8 per cent of value added in all industry (depending on whether \$31 or \$28 billion is taken as value added in engineering). The share of engineering in value added in the ruble price system can be esti-

TABLE 5—STRUCTURE OF COST AND VALUE OF OUTPUT IN SOVIET
ENGINEERING INDUSTRY AND ALL INDUSTRY, 1955

(per cent)

	Cost Structure		Structure of Value Added	
	Machinery	All Industry	Machinery	All Industry
Materials	54.3	66.1	49.2	61.1
Fuel and energy	4.7	6.2	4.3	5.7
Amortization	4.1	3.4	3.7	3.1
Wages and social insurance deductions	33.2	21.2	30.0	19.6
Other	3.7	3.1	3.4	2.9
Profit	—	—	9.6	7.6
Total	100	100	100	100

mated as about 30 per cent of value added in all Soviet industry. This conclusion is derived from Soviet statements on the cost structures for the engineering industry and for all industry, and on the size of the wage bill in engineering industry relative to the wage bill in all industry. According to [19, p. 29] the cost structures were as shown in the first two columns of Table 5. A statement in [14, p. 18] that profit amounted to 10.5 per cent of cost in engineering industry and 8.2 per cent in all industry permits these to be converted into the structures for gross value of output shown in the last two columns. It can be estimated that the wage bill in engineering industry constituted 33.5 per cent of the wage bill in all industry [19, p. 24] [16, p. 50] [1, p. 187]. Ignoring the slight differential in social insurance rates for different industries this information taken together yields the conclusion that gross value of output of the engineering industry was 21.9

⁸ See, for instance, [4]. Granick also suggests that the Soviet definition of machine tools may be slightly broader in scope, and it is stated in the *American Machinist* inventory that the U.S. totals may slightly understate the true stock.

per cent of that in all industry. Defining value added as gross value less the cost of materials, fuel and energy, we compute value added engineering industry as 31 per cent of that in all industry.⁹

Now just such a divergence between the ruble and the dollar relationship is to be expected because of the index number effect. Machinery is much cheaper in price (and in value added) relative to other goods in the ruble price system than in the U.S. price system. The divergence in the two price structures required to make engineering output constitute 45 per cent of total value added in dollars versus 30 per cent of total value added in rubles would be U.S. value-added prices for engineering output about twice as high relative to value-added prices for everything else as in the Soviet Union.¹⁰ This relationship is more or less in line with what is known about ruble-dollar gross price ratios,¹¹ although in terms of value added the relative cheapness of machinery might well be somewhat less because of the relative cheapness of intermediate products and (perhaps) their relatively efficient utilization in machinery production compared to the situation elsewhere in the economy. This is a very indirect approach, but at least it does not imply that \$28-31 billion for Soviet machinery output is an exaggeration.

The results of the calculations so far are summarized below, indicating a Soviet output equal to 50.5-52.8 per cent of U.S. output.

	U.S. (billion dollars)	USSR
Nonengineering industries	84.0	36.7
Engineering industry	44.2	28-31
Total	128.1	64.7-67.7

⁹ We offer this as an approximation, aware that it involves some dangerous assumptions. In particular we doubt that all these relationships are drawn from a single consistent set of data. For example, the ratio of workers in engineering industry to workers in all industry is based on "industry-section" labor statistics, but it is not clear that the cost structures or the profit figures are drawn from a universe with the same outside dimensions or same internal classification. Nevertheless the figure of 30 per cent is probably a close enough approximation for our purposes here.

¹⁰ How much would the present ratio of Soviet value-added prices for engineering output to value-added prices for all other output have to change to make Soviet engineering output constitute 45 per cent of all value added rather than the 30 per cent it constitutes in the actual ruble value-added price structure? Using x to denote the factor by which Soviet value-added prices for machinery would have to be adjusted to achieve this result, we can write

$$\frac{.30x}{.30x + .70} = .45$$

$$x = 1.9$$

¹¹ Ruble-dollar price ratios for 1950 are given in [8]. It seems unlikely that the overall structure would have changed much by 1955.

These results should, however, be adjusted to the same year. The problem is not so much the slight hiatus in time as the fact that 1954 was a recession year in the United States, and so a misleading one for comparison. According to the FRB index, industrial output rose by 11.5 per cent between 1954 and 1955. With this correction, the ratio of Soviet to U.S. output in 1955 would be 45.5-47.6 per cent.

The ratio found refers to a period already seven years past and it would be desirable to know how the relative standing has changed since. Sooner or later our approach can probably be applied to 1958 using the data of the U.S. Censuses for that year. At the moment, however, there is not enough information relating to the Soviet side for 1958 to make

TABLE 6—ESTIMATED RATIO OF SOVIET TO U.S. INDUSTRIAL
OUTPUT BY SECTOR IN 1960 (per cent)^a

Food industry	66.8
Light industry	34.4
Lumber, woodworking, paper	62.4
Chemical and rubber asbestos	40.6
Mineral construction materials	155.1
Ferrous metals	109.0
Fuel	42.9
Subtotal	61.0
Engineering	98-109
Total	75.0-76.4%

^a No projection for the nonferrous metals industry or for printing and publishing was possible because of the absence of a Soviet index.

such a comparison possible. In lieu of that we have made an approximate estimate for 1960 by projecting each half of the ratio within each industry group by its respective output index (i.e., Federal Reserve Board indices for the U.S. and the Central Statistical Administration indices for Soviet output). The results of this calculation are shown in Table 6. The Russians have greatly increased their relative standing in each of the groups shown in the table and by 1960 had reached the level of about three-fourths of U.S. industrial output. This method of projection does not inspire great confidence. In contrast with the conceptual simplicity of the ratios for 1954-55 (i.e., physical ratios weighted by U.S. value-added) the ratios for 1958 are not capable of any simple interpretation. Moreover, there is always some uncertainty about the accuracy of the Soviet output indices. Nevertheless, the authors feel that the conclusions of this projection may be a fairly accurate representation of Soviet relative standing in 1960. We have been able to find enough Soviet data to apply the 1954-55 method to 1958 for two of the simpler groups (i.e., the ferrous metals and fuel industries). In both

these cases the 1958 relatives are nearly as high as those shown in Table 6 for 1960.

III. *Evaluation of the Results*

A ratio of 75 per cent for Soviet industrial output relative to U.S. industrial output seems surprisingly high, and one naturally asks to what degree this finding may reflect the idiosyncrasies of our method. There are two obvious ways in which our method may have been defective: the weighting system and the handling of quality differences.

1. *The weighting system.* Because of the great confusion that weighting problems have caused in past attempts to measure Soviet growth and relative size, it is obligatory to assess the impact of the chosen weighting system on the results we have obtained. What is the rationale of U.S. value-added weights, and how has their use affected our estimate of Soviet size compared to what we might have found with, say, Soviet value-added weights? Unfortunately, this is essentially an empirical question, and the evidence needed to answer it is simply not available. An empirical answer is not likely to be possible without access to much more detailed input-output information about the Soviet economy than is now at hand. (The Russians have constructed an input-output table for their economy for 1959 and if all the information from that study were available, our comparison could be repeated using Soviet value-added weights. Thus far, however, the only part of the flow table from that study which has been published is the northwest quadrant, i.e., the values involved in productive consumption; value of gross output or the amount of value-added components for the various sectors are not disclosed.) What is needed is either ruble-dollar ratios for value-added prices to be checked for correlation with the gross output relatives, or data permitting our gross output relatives to be converted to net output relatives and for these to be checked for correlation with ruble-dollar ratios for gross prices. All that is now available are gross output relatives and gross price relatives, and not much can be deduced from these about the possible index-number effect of using U.S. rather than Soviet value-added weights. What follows, therefore, is limited to explaining the nature of the problem.

The assumed difference between the results of a ruble comparison and a dollar comparison would involve two distinct issues: (a) a possible bias resulting in differences in technical input coefficients in the two economies; and (b) the index number problem proper.

(a) Our approach can be thought of as assuming that identical amounts of gross output in physical terms represent identical physical amounts of net output. To take coal as an example, we assume that one

ton of coal in either country stands for the net output indicated by the expression

$$1 \text{ ton of coal} - \text{coal}^{a_1} - \text{coal}^{a_2} \dots - \text{coal}^{a_n}$$

where the a 's stand for the technical coefficients showing the physical amount of each commodity, 1 through n , consumed in the production of a ton of coal. Aggregation to arrive at value added involves extending each physical flow in this expression by price. Ignoring for the moment the fact that some of the inputs come from nonindustrial branches, obviously the sum of these expressions for all n commodities, each multiplied by the level of gross output of the commodity, is identical in concept with the net physical output of industry in the sense of output left to be transferred outside industry after internal consumption within industry. All that is required to make this concept obvious is a rearrangement of the subtrahends. In this rearranged form, some aggregation is possible just in physical terms, i.e., by netting out the intra-industrial consumption, and the final step in arriving at value added is extension of net physical output by prices.

In fact the technical coefficients are probably not identical in the two countries. Suppose, for example, that all Soviet coefficients were larger than the U.S. ones. In such a situation, U.S. value-added weights can be thought of as applying U.S. gross prices to an exaggerated estimate of the net output of Soviet industry (net output in the sense of output left for transfer elsewhere in the economy after subtraction of consumption within industry). U.S. value-added weights would exaggerate Soviet output just in physical terms. Conversely the use of Soviet value-added weights would be equivalent to applying Soviet gross prices to a downward-biased estimate of U.S. net industrial output.

Obviously, some Soviet coefficients are higher than their U.S. counterparts and some are lower just because of different input mixes relative to U.S. input mixes. But apart from these differences, one could make out a good case that in general Soviet coefficients tend to be higher than U.S. coefficients. Such well-known features of Soviet industry as the high input of metal per machine, the large losses in petroleum transport and refining, the relatively low degree of utilization of timber, the high fuel input relative to power generated, and so on, give an impression that the Russians tend to be wasteful of material inputs compared to the U.S. economy.¹² Such a conclusion is easy to rationalize as simply the result of Soviet technological backwardness, not offset by substitution of labor for materials, or of capital for materials. The Russians

¹² There are some notable exceptions, as in petroleum. The U.S. value-added price for a barrel of oil represents the subtraction of much more material inputs in drilling new wells than the Russian oil industry has in fact spent on producing each barrel of oil.

clearly have a motive for labor-materials substitution, but it is difficult to think of cogent illustrations of the feasibility of this approach. It is easier to think of possibilities for using capital to reduce current material inputs, but capital is too scarce in the Soviet economy for this possibility to appeal to Soviet planners. Hence the use of U.S. value-added weights may somewhat exaggerate Soviet output relative to ours because of this overestimation of net output.

(b) Even if the technical coefficients were identical in both economies, the set of ruble-dollar ratios for value-added might still be correlated with relative gross outputs, resulting in the traditional index-number effect. But we have no way of penetrating deeply enough into the Soviet price system to know whether this would be true. We have in fact found a slight inverse correlation between the ruble-dollar ratios for gross prices and the relative gross output ratios. However, there is no reason this would have to be true of the ruble-dollar ratios for value added. Again even assuming that Soviet and U.S. coefficients (in the part of the matrix representing intra-industrial consumption) were identical, goods that are relatively cheap in the Soviet as compared to the U.S. price structure might be cheap either because of the cheapness of inputs purchased from other industrial enterprises, or because of cheap value-added components (i.e., low wage scales, high labor productivity, low profit mark-up, etc.). The same applies, *mutatis mutandis*, to expensive goods. Hence for a pair of goods A and B, we might find that, in terms of gross prices, A is more expensive compared to B in the United States than in the Soviet Union, but that this relation is reversed in terms of value-added prices. Hence there seems to be no convincing a priori reason why a comparison based on rubles would necessarily show Russian output as relatively smaller than a comparison in dollars, because of the index number problem. Nevertheless, it is not unlikely that some index number effect arises from the most obvious gross structural difference between U.S. and Soviet industry, namely, the large output and relative cheapness of engineering output in the Soviet Union. In the Soviet gross price system, machinery is relatively so cheap that it would be hard to believe that the explanation could be primarily relatively cheap material inputs or extraordinarily efficient use of them. The inputs included in value added must also be relatively cheap and productive, and it seems likely that machinery would be relatively cheap in the Soviet Union in terms of value-added prices as well as in terms of gross prices. Together with the high physical output relative for machinery, this probably gives rise to a significant index number effective as suggested earlier. The relative output ratio for all industry which we have found in dollars is probably higher than what would be found in a ruble comparison.

2. *Quality differences.* It is a commonplace that whatever one may say about quantity, the Russians are far behind the United States in the general quality of industrial output. Average octane rating is much lower for Soviet than for U.S. gasoline; the average heat content of Soviet coal is lower; the quality of construction materials is scandalous; and Soviet machinery very often compares unfavorably with U.S. models in terms of its productivity and operating costs. In the consumer goods sphere, any visitor to the Soviet Union will testify to the generally low quality of most consumer goods. The method of this paper is by nature not well adapted to allowing for these differences in quality, although a rather crude correction for quality differences has been introduced in a number of cases. We can offer no quantitative conclusions on how much weight should be given to these quality differences in assessing relative levels of industrial output; but the following comments can be made:

(a) To a considerable extent the quality problem is not independent of the production coefficients problem already discussed. If the average heat content of Soviet coal is less than in the United States this only means that more tons are required per unit of output. If Soviet window glass is thin and therefore undergoes more breakage in handling and transport, more square feet will have to be produced for each square foot finally put in place. Alternatively, low quality of one input may mean higher input requirements for some other resource—low octane ratings of fuel may mean poorer performance of engines, which means waste of the associated resource inputs.

(b) To the extent that the effect of lower quality penetrates beyond the production sphere, and in some way diminishes “welfare” derived from final output, then it is hard to imagine how this diminution might be quantified. It would be much easier to conceptualize a measurement of the quality shortfall in terms of a production possibility criterion, i.e., one could ask how much it would cost to raise Soviet quality to U.S. standards. In view of the ultimate rationale of the comparison, such would be the proper approach. We want to know when the Russians are going to catch up, and catching up quantitatively will probably require catching up qualitatively as well. Thus the present relative output benchmark ought to be corrected to take account of having to make good the quality shortfall. The real issue here is thus the parameters of quality-quantity trade-off possibilities in the Soviet economy. This is a question relevant also to the interpretation of past growth; and the various studies of the National Bureau of Economic Research have demonstrated the pressure for quality deterioration that exists in the Soviet Union (see, for instance [7, pp. 70-72]). Unfortunately, how-

ever, the kind of work required as a basis for some quantitative judgment on this question has not yet been done.

These factors might warrant discounting slightly the high ratio of Soviet to U.S. industrial output disclosed by our calculations. The possible exaggeration arising out of differences in coefficients and quality differences probably bias our results upward in some unequivocal sense; and the index number problem, growing out of the gross structural differences between the relative prices and outputs of machinery relative to that of all other industrial products in the two economies, probably results in a larger global output relative than would obtain with ruble weights. A determination of the size of the required correction must await more research and more information than the Russians now vouchsafe us on the internal structure of their industrial sector. However, it is difficult to believe that the appropriate correction could be large enough to do more than shift the Soviet relative size series back a year or two.

REFERENCES

1. A. G. AGANBEGIAN, *Zarabotnaia plata v SSSR*. Moscow 1959.
2. A. B. ELIASHEVICH, *Ekonomika sotsialisticheskogo mashinostroeniia*. Moscow 1959.
3. D. GRANICK, "Economic Development and Productivity Analysis; the Case of Soviet Metalworking," *Quart. Jour. Econ.*, May 1957, 73, 205-33.
4. ———, "How Many Machine Tools in the Soviet Union?" *Am. Machinist*, April 11, 1955.
5. ———, "Organization and Technology in Soviet Metalworking," *Am. Econ. Rev.*, May 1957, 47, 631-42.
6. ———, "Technological Policy and Economic Calculation in Soviet Industry," in G. Grossman, ed., *Value and Plan*. Berkeley 1960.
7. G. GROSSMAN, *Soviet Statistics of Physical Output of Industrial Commodities*. Princeton 1960.
8. N. M. KAPLAN AND R. H. MOORSTEEN, "An Index of Soviet Industrial Output," *Am. Econ. Rev.*, June 1960, 50.
9. N. M. KAPLAN AND W. WHITE, *A Comparison of 1950 Wholesale Prices in Soviet and American Industry*, Rand Corporation, May 1955.
10. G. SMIRNOV AND I. IASNOSKII, "Perspektivy sorevnovaniia SSSR i SShA v oblasti mashinostroeniia," *Planovoe khoziaistvo*, 1960, No. 8.
11. V. STAROVSKII, "O metodike sopostavleniia ekonomicheskikh pokazatelei SSSR i SShA," *Voprosy ekonomiki*, 1960, No. 4.
12. L. M. VOLODARSKII, *Statistika promyshlennosti i voprosy planirovaniia*. Moscow 1958.
13. R. WAGENFÜHR, *La production industrielle sovietique dépassera-t-elle la production americaine?* Lausanne 1959.
14. A. ZVEREV, "Gosudarstvennyi biudzh et vtorogo goda shestoi piatiletki," *Planovoe khoziaistvo*, 1957, No. 3.

15. *American Machinist*, Nov. 17, 1958.
16. Tsentral'noe Statisticheskoe Upravlenie, *Dostizheniia sovetskoi vlasti za 40 let v tsifrakh*. Moscow 1957.
17. ———, *Narodnoe khoziaistvo SSSR*. Moscow 1956.
18. ———, *Narodnoe khoziaistvo SSSR v 1958 godu*. Moscow 1959.
19. ———, *Promyshlennost' SSSR*. Moscow 1957.
20. U.S. BUREAU OF THE CENSUS, *The Soviet Statistical System: Labor Force Recordkeeping and Reporting*, by Murray Feshbach, Internat. Population Stat. Repts., Ser. P-90, No. 12. Washington 1960.
21. ———, *Statistical Abstract of the United States: 1957*. 78th edition. Washington 1957.
22. U.S. CONGRESS, JOINT ECONOMIC COMMITTEE, *Comparisons of the United States and Soviet Economies*, Hearings. Washington 1960.
23. ———, *Comparisons of the United States and Soviet Economies*, Papers submitted by panelists appearing before the Subcommittee on Economic Statistics, Pt. I. Washington 1959.

APPENDIX

SOVIET-U.S. OUTPUT RELATIVES, BY FOUR-DIGIT CLASSES OF THE SIC

SIC Class.	Description	USSR-U.S. Production Relative (per cent)	Reliability Category	SIC Class.	Description	USSR-U.S. Production Relative (per cent)	Reliability Category
<i>Food and Tobacco</i>				2081	Bottled soft drinks	15.8	I
2011	Meat packing plants	18.5	I	2082	Beer and ale	18.7	I
2013	Prepared meats	26.3	I	2083	Malt	25.1	I
2015	Poultry dressing plants	8.0	I	2084	Wines and brandy	128.5	I
2021	Creamery butter	72.0	I	2085	Distilled liquor	209.1	I
2022	Natural cheese	19.2	I	2091	Leavening compounds	68.2	I
2023	Concentrated milk	6.0	I	2092	Shortening and cooking oils	6.5	I
2031	Canned sea foods	104.9	I	2093	Margarine	42.8	I
2032	Cured fish	1,626.0	I	2094	Corn wet milling	11.4	I
2033	Canned fruits and veg.	11.2	I	2098	Macaroni and spaghetti	241.9	I
2036	Packaged seafood (fresh and frozen)	225.7	I	2111	Cigarettes	49.2	I
2037	Frozen fruits and veg.	0.3	I	2881-2884	Vegetable oil mills	46.8	I
2041	Flour and meal			2024	Ice cream and ices, special dairy products, fluid milk and other dairy products	40.6	II
2043	Cereal breakfast food	159.2	I	2025			
2044	Rice milling			2026-			
2051	Bread and related products	183.5	I	2027			
2052	Biscuits and crackers	53.2	I	2099	Misc. food products n.e.c.	2.0	II
206	Sugar	65.1	I	2121	Tobacco manufactures except cigarettes	24.5	II
2071	Confectionery products	57.2	I	2131			
2072	Chocolate and cocoa products	6.7	I	2141			
				2841	Soap and glycerine, cleaning and polishing compounds	33.4	II
				2842			
				2887	Fatty acids	26.0	II

SOVIET-U.S. OUTPUT RELATIVES, BY FOUR-DIGIT CLASSES OF THE SIC—*Continued*

SIC Class.	Description	USSR-U.S. Production Relative (per cent)	Reliability Category	SIC Class.	Description	USSR-U.S. Production Relative (per cent)	Reliability Category
2893	Toilet preparations	12.8	II	2273	Carpets and rugs exc. wool		
3984	Candle making	20.6	II	228	Hats, except cloth		
1476	Rock salt and salt	30.4	II	229	Miscellaneous textiles (except linen)		
2898				315	Leather gloves		
2034	Dehydrated fruits and vegetables	2.2	III	3161	Luggage		
2035	Pickles and sauces	neg.	III	3171	Handbags and purses		
2045	Flour mixes	neg.	III	3172	Small leather goods	31.5	III
2073	Chewing gum	neg.	III	3192	Saddlery, harness and whips		
2095	Flavorings	neg.	III	3199	Leather goods n.e.c.		
2097	Manufactured ice	neg.	III	3964	Needles, pins and fasteners		
2843	Sulfonated oils	44.1	III	3981	Brooms and brushes		
2886	Grease and tallow	18.5	III	3992	Furs, dressed and dyed		
2889	Animal oils n.e.c.	105.0	III	3995	Umbrellas, canes		
2892	Essential oils	12.8	III		<i>Lumber, Woodworking, Paper</i>		
2894	Glue, gelatine	18	III	2411	Logging camps	73.6	I
<i>Light Industry</i>				2421	Sawmills and planing mills	88.4	I
2211	Scouring and combing plants	239	I	2422	Veneer mills,	25.6	I
2212	Yarn mills, wool, except carpet	68	I	2432	plywood		
2213	Woolen and worsted fabrics, finishing wool textiles	87.3	I	2433	Prefabricated wood products	73.2	I
2216				2611	Pulp mills	11.6	I
2222	Yarn throwing mills	74	I	2612	Paper and paperboard	12.0	I
2223	Thread mills	12.3	I	2613	Building paper and board mills	12.0	I
2224	Yarn mills, cotton system	61.1	I	3938	Matches	150	I
2233	Cotton broad woven goods, synthetic broad woven fabrics, narrow fabric mills	43.6	I	2423	Shingle mills, cooperage stock	166.4	II
2234				2424	mills, excelsior mills, millwork		
2241				2425	plants, wooden containers, miscellaneous wood products		
2251	Full fashioned hosiery, seamless	42.4	I	2431			
2252	hosiery mills			244			
2299	(linen fabrics only)	8,600	I	249			
2253	Knit outerwear mills	24.5	I	25	Furniture	30.9	II
2254	Knit underwear mills	35.4	I	2641	Converted paper and board products	4.9	II
2261	Finishing textiles, except wool	44.1	I	2651			
3131	Footwear cut stock			2661			
3141	Footwear, except rubber	56.4	I	267			
3142	House slippers				<i>Printing and Publishing</i>		
2255	Knit glove mills	33.2	II	2711	Newspapers	7.8	I
2256	Knit fabric mills	10	II	273	Book publishing and printing	131.7	I
2259	Knitting mills, n.e.c.	33.2	II	2721	Periodicals	17.0	I
23	Apparel	12.8	II	2781	Bookbinding	131.7	I
3111	Leather tanning, finishing	56.4	II		Other printing and publishing	neg.	
3121	Industrial leather belting	70	II		<i>Chemicals and Rubber-Asbestos</i>		
2271	Wool carpets and rugs	7.4	II	2811	Sulfuric acid, alkalis and chlorine, other industrial inorganic chemicals (main reagents only)	26.5	I
				2812			
				2819			

SOVIET-U.S. OUTPUT RELATIVES, BY FOUR-DIGIT CLASSES OF THE SIC—*Continued*

SIC Class.	Description	USSR-U.S. Production Relative (per cent)	Reliability Category	SIC Class.	Description	USSR-U.S. Production Relative (per cent)	Reliability Category
2825	Synthetic fibers	18.1	I	3259041	Roofing tile	2,439	I
286	Gum and wood chemicals	53.7	I	3261	Vitreous plumbing fixtures	27.8	I
287	Fertilizers	43.9	I	32924	Asbestos-cement shingles and panels	312.7	I
3011	Tires and inner tubes	24.0	I	142	Crushed stone, sand, gravel	48.6	
3021	Rubber footwear	177.1	I	144			
1472	Barite mining	18.5	II	1452	Bentonite, magnesite, brucite, fullers' earth, feldspar, refractories n.e.c.	174.4	II
1473	Fluorspar mining	40	II	1456			
1474	Potash and borate mining (potash only) (other than potash)	44.6 26.5	II II	1457			
1475	Phosphate rock	44.6	II	1459			
1477	Sulfur mining	29.1	II	1453	Fireclay	130	II
1479	Chemical and fertilizer minerals n.e.c.	26.5	II	1455	Kaolin, ball clay	59.0	
2811	Sulfuric acid, alkalies and chlorine, other industrial inorganic chemicals (other than main reagents)	26.5	II	1492	Gypsum, gypsum products	24.6	II
2812				3272			
2819				1497	Vermiculite and nonmetallic minerals n.e.c.	316.6	II
2821	Cyclic crudes, intermediates and dyes	113.5	II	3229	Pressed and blown glass n.e.c.	23	II
2822				3262	Vitreous china food utensils, earthenware food utensils	88.4	II
2823	Plastics	9.5	II	3263			
2824	Synthetic rubber	55.4	II	3264	Porcelain electrical supplies	32	II
2851	Paints and varnishes	38.8	II	3265	China decorating for the trade, pottery prod. n.e.c.	88.4	II
2852	Inorganic color pigments	17.7	II	3269			
2896	Compressed and liquefied gases	26.5	II	3274	Lime	121.4	II
3292	Asbestos products, gaskets and asbestos insulations	50.6	II	3281	Cut stone and stone prod., dimension stone	390	II
3293				141			
3971	Plastic products n.e.c.	9.5	II	3231	Glass products made of purchased glass	21.5	III
2826	Explosives, industrial inorganic chemicals n.e.c., carbon black, insecticides and fungicides	38.6	III	3271	Concrete products	60	III
2829							
2897							
283	Drugs and medicines	38.6	III	<i>Nonferrous Metals</i>			
2853	Whiting and fillers	38.6	III	1021	Copper mining, primary copper	40.7	I
2891	Printing ink	17.9	III	3331			
2899	Chemical products n.e.c.	38.6	III	1032	Lead and zinc mining, primary lead and zinc	41.0	I
3031	Reclaimed rubber	32.0	III	1033			
3099	Rubber industries n.e.c.	46.9	III	1034			
<i>Construction Materials</i>				3332			
2274	Hard surface floor coverings	3.2	I	3333			
2952	Roofing felts and coatings	47.4	I	1051	Primary aluminum	32.4	I
3211	Flat glass	29.3	I	3334			
3221	Glass containers	15.0	I	3351	Copper rolling and drawing	21.6	I
3241	Cement, hydraulic	48.6	I	3352	Aluminum rolling and drawing	27.0	I
3251	Brick and hollow tile	557.8	I	3359	Nonferrous rolling and drawing n.e.c.	27.0	I
3253	Floor and wall tile	48.0	I	3361	Nonferrous foundries	27.0	I
3254	Sewer pipe	13.4	I	1099	Gold	490	I
				3339	Silver	70.2	I
					Platinum	516.5	I
					Other nonferrous	75.0	I
				334	Secondary nonferrous metals	neg.	III
				1081	Metal mining contract serv.	58.0	III

SOVIET-U.S. OUTPUT RELATIVES, BY FOUR-DIGIT CLASSES OF THE SIC—*Continued*

SIC Class.	Description	USSR-U.S. Production Relative (per cent)	Reliability Category	SIC Class.	Description	USSR-U.S. Production Relative (per cent)	Reliability Category
<i>Fuels</i>				2931	Coke	80.7	I
111	Anthracite mining	207.1	I	2932			
1211	Bituminous mining	55.2	I	3311	Blast furnaces	61.5	I
1213				3312	Steelworks and rolling mills	56.6	I
1212	Lignite mining	3,998	I	3313	Electrometallurgical products	56.6	I
1312	Crude petroleum	22.6	I	3321	Gray iron foundries	121.2	I
1313	Natural gas	3.6	I	3322	Malleable iron foundries		
1331	Oil, gas contract services	21.4	I	3323	Steel foundries	56.6	I
2911	Petroleum refining	16.6	I	3393	Welded and heavy riveted pipe	45.2	I
1498	Peat			3392	Wire drawing	56.6	II
1314	Natural gas liquids	3.6	II	3255	Clay refractories	130.0	II
1315				3297	Nonclay refractories	174.4	II
2999	Petroleum and coal prod. n.e.c.,	31.96	III	3481	Nails and spikes	70.2	III
2992	lubricants n.e.c.			3494	Bolts, nuts, washers and rivets	70	III
<i>Ferrous Metals</i>				3495	Screw machine products	70	III
1011	Iron ore	104.3	I	3499	Primary metal industries n.e.c.	56.6	III
1062	Manganese ore	1,940	I				

CONSUMPTION, SAVINGS AND WINDFALL GAINS

By MARGARET G. REID*

Friedman's theory of consumption postulates a zero correlation between consumption and transitory income. Windfall gains are presumably a pure form of transitory income. The theory holds that they tend to increase assets; and they tend to increase consumption only in so far as they increase the permanent or long-run expected income [4].

Klein and Liviatan in 1957 challenged this theory, stating [7]: "There is little direct evidence on this matter, but it seems very doubtful that we are justified in considering savings any more than various luxuries as a consumers' ultimate residual which bears the brunt of financial adjustment to changing situations."¹

Several pieces of empirical evidence bearing on windfall gains have so far been presented. Bodkin's evidence [1] [2] is of special interest because his data are a subset of those described later in this article.² He used the data for those consumer units reporting in the urban consumption survey of 1950 who had shared in the soldiers' bonus paid to veterans of the Second World War during the year of the survey.³ He found a higher marginal propensity to spend windfall gains, in the form of bonus payments, than to spend disposable income; the marginal propensities to spend were respectively .97 and .75. With consumption expenditure net of that for durable goods, the propensities were .72 and .56. Thus Bodkin's findings challenged the validity of Friedman's hypothesis.

Jones [6] used the same data to examine the marginal propensity to spend for three main budget categories, namely, food, housing and

* The author is professor of economics, University of Chicago.

¹ Klein and Liviatan present evidence that windfall gains for consumer units in the United Kingdom whose heads were retired or unoccupied were negatively related to savings [7, pp. 156-57].

² In order to simplify the conditions represented, Bodkin excluded from his set consumer units whose heads were self-employed or not employed and further restricted it to those units the age of whose head was between 21 and 45 years and to those with 2 to 4 persons.

³ Announcement was made in November 1949 of the impending distribution of the bonus, payments began in January 1950, and three-quarters of the dividends had been paid by the end of March 1950. Thus the payments were made early enough in the year so that purchases out of such receipts, even those involving considerable planning or shopping around, would have been feasible during the year of the survey.

clothing. In general, he found the marginal propensity to spend higher for windfall gains than for disposable income. His concluding remarks imply considerable doubt as to the meaning of the evidence. He states: "There remains the chance that the expenditure-windfall relationships are spurious."⁴

Krein [8] has also presented evidence on expenditure and savings out of windfall gains using data of a 1957-58 survey of Israeli families. He examined the data in various ways including the method used by Bodkin. He found the marginal propensity to consume out of windfall gains to be very low: "When durable goods are excluded from consumption, the marginal propensity to consume nondurables out of windfall income is .156." The correlation between windfall gains and disposable income of consumer units did not appear to him to account for the difference between his findings and those of Bodkin. Krein thought that the larger ratio of windfall gains to income for his than Bodkin's data might have stimulated the purchase of consumer durables or payment of debts or building up for reserves rather than consumption.

This article examines further data of the urban consumption survey of 1950. Its findings are consistent with the Friedman hypothesis and with Krein's findings, but are inconsistent with the findings of Bodkin and Jones.

I. *The Data and the Main Variables*

In the estimates that follow, windfall gains are represented by "other money receipts," that is receipts other than those classed as money income. These are defined as "inheritances and occasional large gifts of money from persons outside the family . . . and net receipts from the settlement of fire and accident policies"; they include the soldiers' bonus.⁵ Some of these receipts may have been anticipated. However, there seems no reason to suppose that the degree of unexpectedness was greater for other money receipts, *in toto*, than for the soldiers' bonus.

The observations examined are averages, for a set of places (to be defined shortly), for consumer units whose heads were wage or salary workers. Consumer units whose heads were self-employed or not employed were excluded in the hope of increasing the homogeneity of conditions, other than permanent income and windfall gains,⁶ that might affect the propensity to spend. The tendencies observed were likely to be

⁴High standard errors of the regression coefficients of windfall gains appear to have been responsible for his doubts.

⁵Rough calculations indicate that the soldier's bonus accounted for about one-half of other money receipts.

⁶The consumer units represented constitute 76.5 per cent of all those reporting. Bodkin made a similar exclusion [1] [2].

little if at all affected by transitory income randomly related to the permanent income of consumer units. Presumably, for the places represented, its mean tended to be zero.

There are 32 observations, one for each of 32 "places." These include one observation for each of the nine classes of cities, as defined by the survey, namely, large cities, suburbs and small cities of the North, South and West. In addition, there are observations for each of 23 cities or combinations of 49 cities.⁷ The combinations were made in order to increase the likelihood that the transitory income of consumer units would have a zero mean for the observations. In the case of no observation is the number of consumer units represented less than 200. The 23 cities or combinations of cities represent independent observations, and the three regional observations representing small cities are almost wholly independent.⁸ Hence, in gauging the significance of the tendencies observed one can assume that there are 26 independent observations. The consumer units of the additional 6 observations, those for large cities and suburbs, are also represented by the set of 23 cities or combinations. Such duplication serves in part as a substitute for weighting by number of consumer units reporting. In the estimates made each place has a weight of one.

Average disposable money income (Y) and other money receipts (O) are the principal explanatory variables. The variable O represents a small portion of the total funds received. For all consumer units represented O is 1.15 per cent of Y . The mean of O/Y for the 32 observations is 1.43 per cent. A considerable range exists among places, from .23 to 6.15. Among the places there is a very slight positive correlation between Y and O of .09.⁹ (See Table 2.)

In testing the effect of windfall gains three components of consumption expenditure are examined with respect to Y and O . The first two components, expenditure for furnishings and equipment and expenditure for the purchase of automobiles are suspected of being positively correlated with O . Average expenditure for such products, by place of residence of consumer units, is symbolized by C_f and C_a respectively. Average total expenditure is symbolized by C ; and the third component of consumption expenditure, which is simply the residual ($C - C_f - C_a$), is symbolized by C_o . The distribution of Y and O in the consumer account is further tested by an examination of the variation in savings,

⁷ For the most part the combinations represent cities within the same state or region. There were 49 cities altogether for which reports were secured from at least 100 consumer units (only for such places is information reported by occupation). The observations for the 23 cities or combinations of cities utilized the data for these 49 cities.

⁸ One small city is also included in the set of 23 cities or combinations of cities.

⁹ Bodkin observed a correlation between disposable income and the soldiers' bonus received of .092.

represented by two components: personal insurance and net change in assets. These are symbolized by S_1 and S_2 respectively. Thus the entire flow of receipts and disbursements in the accounts of the consumer units is examined. In interpreting some of the tendencies shown,¹⁰ it should be borne in mind that average disbursements reported in the survey of 1950 exceed average receipts; the difference amounts to 3.04 per cent of disposable money income.

All variables are expressed in arithmetic form and special attention is given to the marginal propensities to spend and to save. Estimates have been made of the correlation of the various components of consumption and of savings with Y and O . The estimating equation for C_I , for example, is:

$$(1) \quad C_I = a + bY + cO.$$

For the consumption components the partial regression coefficients b and c of such an equation represent marginal propensities to save.

II. *Other Conditions that Might Affect Tendencies Observed*

Expenditure for furnishings and equipment, expenditure for automobiles, and net change in assets have a crucial role in the test made. Hence the validity of the test seems likely to be improved if conditions other than Y and O that may affect the variation among places in C_I , C_a and S_2 can be held constant.

Owner-occupancy appears to be one such condition. Note the ratios of C_I , C_a , S_2 and O to Y shown in Table 1. Both C_I/Y and C_a/Y are somewhat higher for owner- than tenant-occupants (referred to hereafter as owners and tenants). In addition, S_2/Y is much higher for owners than tenants; and so also is O/Y . Thus it seems likely that, among places, components of consumption and savings will tend to be related to the percentage of owner-occupancy (symbolized by H). Among the 32 places, H ranges from 18 to 61 per cent. Its importance for this analysis arises from the fact that the kind of tenure seems likely to have a direct effect on C_I , C_a and S_2 , and in addition it may serve as a proxy for some conditions not otherwise represented.

The simple correlations of H with C_I , C_a and S_2 , are appreciable. (See Table 2, line 3.) It is positively correlated with both Y and O , and its correlation is higher with O than with Y . In so far as O represents the soldiers' bonus, a positive correlation of H and O is to be expected. The population expansion in various cities in 1950, to which the veterans contributed, was greater in suburbs and in cities where owner-occupancy was high than where it was low. In addition, a positive correlation between H and O would have been heightened if O had tended

¹⁰ Such as the sum of the regression coefficients of C , S_1 and S_2 .

TABLE 1—RATIOS OF EXPENDITURE FOR FURNISHINGS AND EQUIPMENT (C_f), PURCHASES OF AUTOMOBILES (C_a) AND CHANGE IN NET ASSETS (S_2), OTHER MONEY RECEIPTS (O) TO DISPOSABLE INCOME (Y), BY TENURE OF DWELLING UNIT, ALL URBAN CONSUMER UNITS, 1950^a

Tenure	Percentage of Consumer Units (1)	C_f (2)	C_a (3)	S_2/Y (4)	O/Y (5)
1. Owner-occupants, all	48.5	7.1	7.0	.38	1.6
a. Those buying in 1950	4.4	15.7	6.8	-8.01	5.2
b. Other	44.1	6.2	7.0	1.23	1.3
2. Tenants	51.5	6.2	5.6	-4.73	0.8

^a Definitions are given in Table 2.

Source: [9, Vol. 18, Table 6.]

to be used as a down payment in the purchase of a dwelling unit; H would be in part a function of O . That this occurred seems likely: 4.4 per cent of all consumer units purchased a dwelling unit for owner-occupancy during 1950 and these units received 21 per cent of all other money receipts. O/Y , for owners by date of purchase of their dwelling

TABLE 2—CORRELATION MATRIX OF AVERAGE CONSUMPTION EXPENDITURES, AND CHANGE SAVINGS AND AVERAGE INCOME, WINDFALL GAINS AND ASSOCIATED CONDITIONS, 32 URBAN PLACES, 1950^a

	O (1)	H (2)	N (3)	A (4)	C_f (5)	C_a (6)	C_o (7)	S_1 (8)	S_2 (9)
1. Y	.090	.072	-.035	.417	.688	.249	.926	.793	.049
2. O		.138	.230	-.262	.156	.193	.043	.182	.345
3. H			.183	-.123	.373	.714	-.199	.058	.389
4. N				-.352	.360	.304	-.044	-.219	-.141
5. A					.031	-.193	.460	.088	.008

^a The estimates shown represent all urban consumer units other than those with head self-employed or not employed. All variables are in arithmetic form. See page 730 for description of the 32 urban places.

Symbols:

Y , disposable money income

O , other money receipts

H , percentage of consumer units with owner-occupancy

N , the number of owner-occupants who purchased their dwelling units in 1950 per 100 of all consumer units

A , age of head of consumer unit

C_f , expenditure for furnishings and equipment

C_a , expenditure for purchases of automobiles

C_o , total expenditure minus C_f and C_a

S_1 , outlays for personal insurance

S_2 , increase in net assets.

Source: [9, Vols. 1, 2 and 10, Table 8.]

unit, is shown in Table 1, lines 1, a and 1, b. For owners who purchased during 1950, O is 5.2 per cent of Y , and for other owners it is 1.3.

Circumstances contributing to the correlations of C_I , C_a and S_2 with H include the following:

1. Owner-occupants are more likely than tenants to own all of the furniture and equipment used. The more tenants pay for these through contract rent the lower is likely to be C_I . Hence, other conditions held constant, an increase in H seems likely to increase C_I . The difference by tenure in ownership of furnishings and equipment seems likely to be most marked for kitchen and laundry equipment. However, in this article, total expenditure for furnishings and equipment only is considered. Furthermore, the practice of landlords in providing furnishings and equipment to tenants probably differs among cities. No account is taken of this variation. Hence, H is at best a crude index of the extent to which tenure affects C_I .

2. Among places, the correlation of C_a and H is high, much higher than that of C_a and Y : namely, .714 and .249 respectively. It seems probable that H serves as a proxy for an environmental condition that affects C_a for both owners and tenants, although its effect is probably greater for owners than tenants. Owner-occupancy and reliance on the automobile for transportation both seem likely to be positively correlated with low density of land use, and the lower such density the less satisfactory is public transportation likely to be compared to the use of private automobiles.

3. The positive correlation of S_2 and H probably represents the important effect which acquisition of an equity in the dwelling unit has on the program of savings by the consumer unit.

A variety of conditions contribute to the tendencies observed for H . One not so far considered has special implications for C_I and S_2 , namely, the length of time that has elapsed since the purchase of the dwelling unit occupied. During the year when the purchase is made C_I tends to be high, and S_2 tends to be low. Net saving comes later, after the expense of acquiring and furnishing the dwelling unit. The ratios C_I/Y and S_2/Y for (1) owner-occupants who purchased their dwelling units in 1950 and (2) other owner-occupants are shown in Table 1. C_I/Y is 15.7 for those who bought during 1950 and 6.2 for those who bought earlier. In fact, C_I/Y for those owners who bought prior to 1950 is identical to C_I/Y for tenants. The effect of time of purchase on change in net assets is very striking: S_2/Y is -8 for those who bought in 1950 and 1.3 for those who bought earlier. Thus the launching of a major program of savings was associated with a marked decline in net assets as measured.

Such differences make it seem advisable, in studying the allocation of windfall gains, to hold constant the importance of owners who pur-

chased their dwelling units during 1950. The variable used is the percentage of all consumer units who purchased during 1950. This is symbolized by N , referring to those recently purchasing a dwelling unit for owner-occupancy. It has considerable positive correlation with C_I and a negative correlation with S_2 .

Age of the head of the consumer unit is another characteristic that tends to affect the proportion of the consumer dollar going to C_I and to savings. For example, C_I as a percentage of income tends to fall with increasing age of head. In addition, net increase in assets tends to be higher after the head passes 50 years of age, and is especially high where the head is 65 to 75 years of age and employed. Thus there seems reason to expect, for the set of consumer units represented in this analysis, that S_2 tends to be positively correlated with average age of the heads of consumer units. Average age of head is symbolized by A . Among the 32 places, its range is relatively small, from 40 to 44 years.¹¹

Thus there are three explanatory variables in addition to Y and O . The final estimating equation for C_I , for example, is as follows:

$$(2) \quad C_I = a + bY + cO + dH + eN + fA.$$

III. *The Findings*

Coefficients of correlation of consumption and savings with respect to income (Y), windfall gains (O) and the associated conditions are summarized in Table 3. Panel A shows coefficients with Y and O as the explanatory variables. Panel B adds H to the explanatory variables, Panel C adds N , and Panel D adds A . In general, the findings are consistent with the Friedman hypothesis. Virtually none of the windfall gains goes to the consumption of items not commonly classed as consumer capital and much of it goes to savings in the form of an increase in net assets apart from personal insurance.

With Y and O as the sole explanatory variables (Panel A), expenditure for C_I and C_a per dollar of money receipts is shown to be lower for Y than O , and the tendency to spend O is greater for C_a than for C_I . On the other hand, expenditure for other consumer products, represented by C_o , is much greater for Y than for O . In addition, there is a very marked difference between Y and O in their relation to change in net assets (S_2).

The addition of H as an explanatory variable (Panel B), modifies somewhat the tendencies shown in Panel A: (1) it reduces the marginal propensity to spend O for C_I , C_a and S_2 , and increases it for C_o , and (2) it also increases somewhat the marginal propensity to spend Y for

¹¹ The exclusion of consumer units whose heads were self-employed or not employed tends to lower the average age of head and to reduce its range among the cities.

TABLE 3—MARGINAL PROPENSITIES TO SPEND AND TO SAVE WITH RESPECT TO Y , O AND ASSOCIATED CONDITIONS, 32 URBAN PLACES, 1950^a

	Consumer Durable Goods			Consumption Expenditure Excluding Some Consumer Durables	Savings	
	C_f (1)	C_a (2)	C_{fa} (3)	C_o (4)	S_1 (5)	S_2 (6)
Panel A: Explanatory variables, Y and O						
1. R^2	.482	.095	.216	.864	.642	.119
2. Y	.045	.032	.077	.901	.049	.004
3. O	.053	.223	.250	-.354	.058	.685
Panel B: Explanatory variables Y , O and H						
1. R^2	.581	.557	.606	.929	.632	.238
2. Y	.044	.026	.070	.917	.049	-.001
3. O	.029	.119	.122	-.007	.059	.593
4. H	.783	3.495	4.293	-9.544	-.031	3.094
Panel C: Explanatory Variables Y , O , H and N						
1. R^2	.701	.581	.658	.932	.677	.327
2. Y	.046	.028	.073	.920	.047	-.005
3. O	-.016	.080	.046	-.157	.084	.722
4. H	.608	3.346	3.997	-9.880	.067	3.594
5. N	4.547	3.864	7.677	8.695	-2.555	-12.963
Panel D: Explanatory Variables Y , O , H , N and A						
1. R^2	.708	.602	.684	.934	.789	.374
2. Y	.050	.038	.088	.896	.057	-.018
3. O	-.032	.037	-.020	-.050	.041	.775
4. H	.586	3.288	3.911	-9.740	.011	3.663
5. N	4.146	2.809	6.102	11.267	-3.591	-11.688
6. A	-2.898	-7.616	-11.383	18.588	-7.482	9.219

^a See Table 2 for source of data and description of the variables. R^2 is the coefficient of determination.

C_o . Furthermore, H has a marked positive relation to C_f , C_a , and S_2 and a negative relation to C_o . These are consistent with expectations based on Table 1.

The addition of N , as an explanatory variable (Panel C), brings a further decrease in the marginal propensity to spend O for C_f and C_a . The effect is sufficient to suggest that with N held constant O has no tendency to increase expenditure for C_f . However, even with N held constant, O is positively correlated with C_a . Holding N constant tends to increase the marginal propensity to spend O for S_2 , from .59 to .72. This is not surprising since it seems likely that the greater the proportion of those purchasing dwelling units during the year of the survey

the greater the tendency for liabilities to increase more than assets, and the greater the proportion of other owner-occupants the greater the tendency for assets to increase more than liabilities.

The further addition of A as an explanatory variable affects only slightly the tendencies observed (see Panel D).

Probably the main finding is the marked tendency for O to increase S_2 . A secondary finding of considerable importance is the role of H with respect to tendencies observed for C_f , C_a , and S_2 , and hence the need, in any study of savings and expenditure for durable goods, for differentiating consumers by tenure and by year of purchase of their dwelling unit.

The interplace correlations just reviewed are consistent with the findings by Kreinin. They leave questions as to the interpretation of the tendencies observed by Bodkin and Jones.

Friedman [5] in discussing Bodkin's findings speculated on the possibility that various conditions might have resulted in windfall gains serving as proxy for permanent income. In addition, there seems some possibility that the set of consumer units receiving the soldiers' bonus were relatively homogeneous with respect to permanent income. The greater such homogeneity the greater is likely to be the importance of the random error in the income of consumer units, which presumably tends to lower the elasticity of total consumption with respect to income among consumer units.

The evidence presented here makes it seem highly probable that the receipt of the bonus in 1950, especially where the amount was large, stimulated the purchase of dwellings for owner-occupancy and hence served to launch consumer units on a savings program of considerable importance. At the same time, C/Y of such owner-occupants was relatively high. Bodkin and Jones ignored the possible influence of owner-occupancy on the flow of funds received. Furthermore, 1950, for which Bodkin's data applied, may well have been an unusual year. Purchase of a dwelling unit, especially by veterans of the Second World War was feasible with a very small down payment and the conditions of the rental market during that year created some incentive for consumers to become owner-occupants.

Kreinin also ignored the role of owner-occupancy. However, such occupancy is a much less important form of saving in Israeli than in urban areas of the United States.

IV. *Concluding Comments*

The evidence presented above, like that by Eisner [3], gives reason to suppose that interplace correlations provide a useful technique for deriving observations free from random error, and hence for studying con-

sumption and savings in relation to permanent income and conditions other than random transitory income. However, tendencies indicated by such correlations must be accepted with some reservations. Are there conditions correlated with the average income of places that affect tendencies observed? This article has demonstrated the probable effect of the nature of tenure and also of density of land use, both of which appear to be represented by the importance of owner-occupancy. There may well be other conditions, such as price. Searching for such conditions and finding variables to represent them should continue.

This article has ignored the response to windfall income of consumer units whose heads were self-employed or not employed. There seems no reason to suppose that their behavior is represented by the evidence presented. It may well be that future surveys will be adequate in scope to permit estimates for these groups to be made using interplace correlations and taking into account the variety of conditions peculiar to such consumer units.

In addition, the data examined represent an unusual economic situation. The housing market was unique in several respects and the formation of new households unusually important. The cumulation of evidence from interplace correlations for other years should permit insight into the response of consumer units to a variety of changing conditions.

REFERENCES

1. RONALD BODKIN, "Windfall Income and Consumption," *Am. Econ. Rev.*, Sept. 1959, 49, 602-14.
2. ———, "Windfall Income and Consumption," in Irwin Friend and Robert Jones, eds., *Proceedings of the Conference on Consumption and Saving*, Vol. 2, Philadelphia 1960, pp. 175-88.
3. ROBERT EISNER, "The Permanent-Income Hypothesis: Comment," *Am. Econ. Rev.*, Dec. 1958, 48, 972-90.
4. MILTON FRIEDMAN, *A Theory of the Consumption Function*. Princeton 1957.
5. ———, "Comments," in Irwin Friend and Robert Jones, eds. [2, pp. 191-206].
6. R. C. JONES, "Transitory Income and Expenditures on Consumption Categories," *Am. Econ. Rev., Papers and Proceedings*, May 1960, 50, 584-92.
7. L. R. KLEIN AND N. LIVIATAN, "The Significance of Income Variability on Savings Behaviour," *Bull. Oxford Univ. Inst. Stat.*, May 1957, 19, 151-60.
8. M. E. KREININ, "Windfall Income and Consumption—Additional Evidence," *Am. Econ. Rev.*, June 1961, 51, 388-90.
9. *Study of Consumer Expenditures, Incomes and Savings: Statistical Tables, Urban U.S.—1950*, tabulated by the U.S. Bureau of Labor Statistics for the Wharton School of Finance and Commerce, 1957.

INCOME AND EMPLOYMENT MULTIPLIERS, AND THE PRICE LEVEL

By PAUL DAVIDSON*

Although Keynes suggested that "the general price-level depends partly on the rate of remuneration of the factors of production which enter into marginal cost and partly on the scale of output as a whole, *i.e.* (taking equipment and technique as given) on the volume of employment" [5, p. 294], the typical Keynesian multiplier analysis has ignored the problem of changing price and wage levels as output expands or contracts.

The pedagogical simplicity of existing "real" multiplier formulations has obstructed attempts to analyze concurrent price movements. Multiplier analysis has usually been applied to the following cases: (1) the involuntary unemployment case, where prices are assumed constant and output is variable,¹ and (2) the full employment case, where output is assumed constant and prices are variable. Hence in (1) changes in money income can be directly related to changes in real income, while in (2) changes in money income are directly related to changes in the price level.

Although the usual multiplier models have given valuable insight into income generation and contraction processes, they have not been helpful for policy purposes, for they are unable to deal with simultaneously occurring economic events, *e.g.*, price movements before full employment, changes in employment levels, money-income determination, and distributive effects of expansionary and contractionary forces [10, pp. 177-78]. For example, the typical Keynesian multiplier model is incapable of explaining the continuous rise in the Consumer Price Index since the bottom of the 1958 recession despite the persistent presence of high rates of unemployment and excess capacity.

*The author is assistant professor of economics at the University of Pennsylvania. He is indebted to S. Weintraub, E. O. Edwards, L. R. Klein, A. Lerner, and E. Smolensky for helpful comments on earlier drafts of this paper, to I. B. Kravis for making available some unpublished empirical estimates, and to C. L. Leven for checking the mathematical analysis.

¹The typical involuntary unemployment multiplier system, although designated a Keynesian model, is incompatible with Keynes' *General Theory* since he there indicated that any changes in effective demand at less than full employment will affect prices as well as output and employment [5, pp. 284-86].

The purpose of this paper is to develop simple multiplier formulations which (a) are compatible with the conceptual framework of *The General Theory*² and the modern theory of the firm, and (b) are useful for policy purposes in that they permit the analysis of the effects of changes in aggregate demand on price and wage levels, employment and output levels, and money-income determination and its distribution.

Our analysis will emphasize (1) the heterogeneity of economic interests among members of the same economic group (e.g., employed vs. unemployed workers, rentier vs. entrepreneur capitalists) on such economic policy issues as inflation and/or changes in the level of employment [11, pp. 278-79] [13, pp. 58-59]; (2) the asymmetry of price-level changes and the employment multiplier in an expansion as compared to a contraction; and (3) the effect of changes in the distribution of income on expansions and contractions.

In the appendix some crude statistical estimates of the magnitude of the multipliers developed in this paper are presented.

I. *The First Model: Money-Wage Rate Constant*

The analysis will be based on the concept of an aggregate supply function as developed from its Keynesian origin [5, pp. 25, 29] by Weintraub. Given the level of factor prices, an aggregate supply function relating employment (N) to expected money proceeds (Z) can be derived "in the sense that each expected-proceeds level generates a particular amount of employment." Each proceeds quantity (i.e., expected total revenue) is obtained from individual industry supply curves by multiplying the supply prices by the associated output and summing over all industries. These sums are related to the volume of employment required for the particular output quantities via production functions [13, pp. 25-27].

The following symbols will be used in this presentation:

A —average physical product of labor

b —marginal (= average) propensity to consume of wage-earners

C_r^f —rentiers' real consumption

C_r^r —real consumption out of the gross profit residual

C_r^w —wage-earners' real consumption

²The extent to which the Keynesian framework has been obscured is most obvious in the modern theory of international adjustments. Machlup, for example, in his comprehensive study of foreign-trade multipliers assumes infinitely elastic supply curves because he is "not equipped" to deal with changing price and distributional effects. He defends his stable price assumption on the grounds that it rules out a great many complications and "there is little that a general theory can do about this mass of 'possibilities'" [9, pp. 204 n., 205]. Nevertheless, it is just these wage, price and distributional complications which are relevant for trade policies and which have attracted the attention of economists since Ricardo. (Elsewhere, I have suggested how these complications could be handled in a macroanalysis of an economy engaging in international trade [2, pp. 114-19].)

- D*—aggregate demand in money terms
D_r—aggregate demand in real terms
f—marginal (= average) propensity to consume of rentiers
F—fixed money income payments
I—money expenditures on investment
I_r—real investment
k—the reciprocal of the wage share
K—the stock of capital
M—marginal physical product of labor
MC—marginal cost
N—employment
P—price level of composite commodity
Q—output quantity of composite commodity
r—marginal (= average) propensity to consume out of the gross profit residual
w—money-wage rate
Z—aggregate supply in money terms (GNP)
Z_r—aggregate supply in real terms (= *Q*)
 α, β —production function constants

The following assumptions will facilitate the analysis: (1) we are concerned with a purely competitive closed economy with profit-maximizing entrepreneurs, (2) the money-wage rate is constant, (3) a homogeneous labor force is the only hired variable factor of production, (4) involuntary unemployment exists, (5) a composite commodity is produced by fully integrated firms using an identical technology, (6) the aggregate production function is of the Cobb-Douglas type, (7) there are no government expenditures or receipts, (8) there are three income recipient groups (wage-earners, rentiers, and profit recipients) and the real consumption of each group is a simple proportional function of the real income of that group [4, p. 95], and (9) the level of money investment expenditures is exogenously determined. This last assumption would be apropos if businessmen were to budget a given amount of money for investment and did not alter their decisions. If the period of analysis is relatively short, this supposition may approximate reality.

These assumptions impose the following conditions on the system: The aggregate production function takes the form:

$$(1) \quad Q = \beta N^{\alpha} K^{1-\alpha}$$

Consequently, at any level of factor hire, the ratio of average product to marginal product of labor (and the reciprocal of the wage share) is a constant [1, p. 194] [2, p. 110],

$$(2) \quad A/M = 1/\alpha = k$$

The price level of the composite commodity is a function of the money-wage rate and the marginal productivity of labor:

$$(3) \quad P = MC = w/M$$

Accordingly, the price level varies directly with the level of employment and consequently is different at each point on the aggregate supply function which relates employment to expected money GNP. As Weintraub has shown [13, p. 51], the shape and position of the aggregate supply curve will depend on the ratio of average to marginal product and the money-wage rate, i.e.,

$$(4) \quad Z = (A/M)wN = kwN$$

Thus, in Figure 1, Z is a linear function of N .

Money aggregate demand is equal to the sum of the money consumption expenditures of the three income groups plus money investment expenditures. Hence, an aggregate demand function in money terms can be derived given the consumption behavior of the three income groups and the investment decisions of businessmen.

Given the aggregate demand and supply functions of D_1 and Z_1 in Figure 1, then N_1 is the equilibrium level of employment and Z_A is the equilibrium level of GNP (with an implicit price level of P_1). If there is a parametric shift in the aggregate demand function to D_2 because of an autonomous rise in investment expenditures, then the new equilibrium values, *ceteris paribus*, are N_2 and Z_B , while the new price level

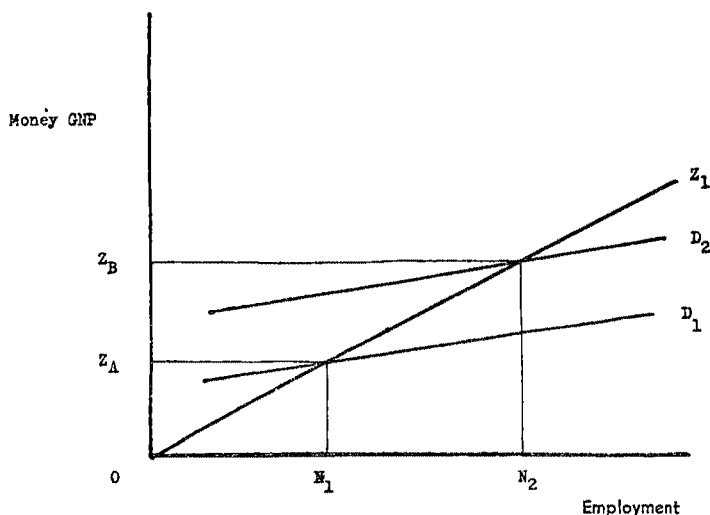


FIGURE 1

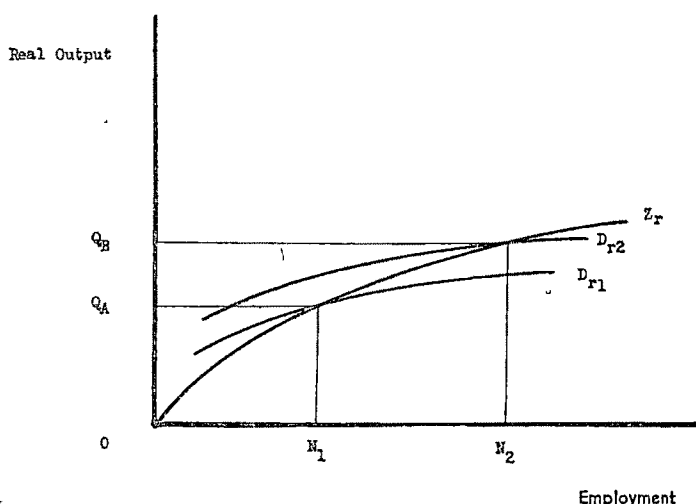


FIGURE 2

(P_2) is higher than the old price level (P_1) because of diminishing returns.

A. *The Multiplier*

Let us now analyze this system in greater detail. Underlying the monetary aggregate supply and demand functions will be real phenomena. The real aggregate supply curve (Z_r) relating physical output with employment is, of course, the familiar total product curve (Figure 2). Since the production function is of the Cobb-Douglas type, the total product curve rises at a continuously decreasing rate.

The real aggregate demand function can be decomposed into separate real consumption functions for each income group and real investment expenditures,

$$(5) \quad D_r = C_r^w + C_r^r + C_r^f + I_r$$

For simplicity we have assumed that the consumption of each income group is a simple proportionate function of the real income of each group. Thus, the consumption functions would be:

$$(6) \quad \text{wage-earners:} \quad C_r^w = b \frac{wN}{P}$$

$$(7) \quad \text{rentiers:} \quad C_r^f = f \frac{F}{P}$$

$$(8) \quad \text{profit recipients:} \quad C_r^r = r \left(\frac{Z - F - wN}{P} \right) = \frac{r[(k-1)wN - F]}{P}.$$

These functions have several interesting implications. Equation (7) is particularly noteworthy in that it suggests that as employment and prices rise, the real consumption of rentiers declines (although their money consumption spending remains constant). Hence rentiers are "forced" to save without accumulating either any real or monetary assets.³ Implicit in equation (8) is the assumption that a constant proportion of the real gross profit residual is distributed and that the proportion of the distributed profits spent on consumption is constant; or, if changes in the proportion of the profit residual distributed were to occur they would be offset by changes in the proportion of the distributions that are consumed [4, p. 95] [11, pp. 258-59].

Equations (6) and (8) suggest the important proposition that it is the consumption behavior of wage-earners and profit recipients which tends to give the real aggregate demand function its positive slope. On the other hand, since real investment declines as employment rises [assumption (9)], rentiers' and investment spending tends to reduce the upward slope of the real aggregate demand function (Figure 2).

In equilibrium, aggregate supply equals aggregate demand,⁴ i.e., $Z_r = D_r$. Since $Z_r = Z/P$, therefore, using equations (4) through (8), the equilibrium condition can be written as:

$$(9) \quad \frac{k w N}{P} = \frac{b w N}{P} + \frac{r[(k-1)wN - F]}{P} + \frac{fF}{P} + \frac{I}{P}$$

Multiplying through by P and expanding terms, we obtain

$$(10) \quad k w N = b w N + r(k-1)wN + (f-r)F + I$$

Solving for N :

$$(11) \quad N = \frac{1}{w[k-b-r(k-1)]} [(f-r)F + I]$$

³Weintraub has previously noted this phenomenon in analyzing his system and has some cogent comments on the often observable "forced" savings of rentiers [13, pp. 42-43, 124]. Also see Keynes' comments on "unproductive consumption" [6, pp. 124-25].

⁴A stable equilibrium exists if the excess of aggregate demand over aggregate supply decreases with increasing employment levels, i.e.,

$$(9a) \quad \frac{d(D_r - Z_r)}{dN} < 0$$

This implies that the slope of the aggregate demand function is less than the slope of the aggregate supply function.

$$\frac{dD_r}{dN} < \frac{dZ_r}{dN}$$

or

$$(10a) \quad b + r(k-1) < k$$

Rearranging terms

$$(10b) \quad b - r < k(1-r)$$

Since normally $k > 1 > b > r$, a stable equilibrium is assured.

Consequently, for a given change in I , we obtain the resultant change in N , or the employment multiplier as:

$$(12) \quad \frac{\Delta N}{\Delta I} = \frac{1}{w[k - b - r(k - 1)]}$$

The employment multiplier relates the additional employment created by an increment in money expenditures, assuming w is constant.⁵

Similarly substituting Z/kw for N in equation (11), we may solve for Z :

$$(13) \quad Z = \left[\frac{k}{k - b - r(k - 1)} \right] [(f - r)F + I]$$

Consequently, the money income (GNP) multiplier is:

$$(14) \quad \frac{\Delta Z}{\Delta I} = \frac{k}{k - b - r(k - 1)}$$

The money income multiplier relates the change in money GNP due to an exogenous increase in money expenditures.

Inequality (10a) in footnote 4 implies that the term $[k - b - r(k - 1)]$ which appears in the denominator of both multipliers, is positive, hence both of the multipliers are positive. These multipliers offer a useful contrast to the conventional "real income" multipliers which have become commonplace in the literature.⁶ Our multipliers indicate that for a given change in I , the change in GNP depends on (1) the marginal propensities of wage-earners and profit recipients and (2) the distribution of income as expressed through k . The change in employment for a given change in I , however, depends on the money-wage rate, as well as the marginal propensities (b and r) and the distribution factor (k).

⁵ Our employment multiplier differs from Kahn's concept which stressed the relationship between the increment in total employment and a given increase in employment in the investment industries [3]. Although Kahn's ratio is designated as the employment multiplier in *The General Theory*, Keynes noted that Kahn's intention was to lay down "general principles by which to estimate the actual quantitative relationship between an increment of net investment and the increment of aggregate employment which will be associated with it" [5, pp. 113-14]. Since equation (12) deals directly with this latter relationship, I've designated it as the employment multiplier.

⁶ The employment and money income multipliers may be reduced to a more familiar algebraic form by dividing their numerators and denominators by k , i.e.,

$$\frac{\Delta N}{\Delta I} = \frac{1/k}{w/k[k - b - r(k - 1)]} = \frac{1}{kw\{1 - [b(1/k) + r(1 - 1/k)]\}}$$

and

$$\frac{\Delta Z}{\Delta I} = \frac{1}{1 - [b(1/k) + r(1 - 1/k)]}$$

where $[b(1/k) + r(1 - 1/k)]$ is simply a weighted average of the marginal propensities to consume of the different economic classes which share in the increments of income.

As might be expected, the magnitude of the multipliers varies directly with the marginal propensities to consume, i.e., the greater the additional real consumption out of a given increment in real income for wage-earners and/or profit recipients, the greater the multiplier effects. Moreover, the magnitude of the multipliers varies inversely with changes in the magnitude of k , the income distribution factor. For example, should k increase, the shift in relative income away from the usually higher marginal-spending wage-earners and towards the usually higher marginal-saving profit recipients would reduce aggregate spending repercussions.

Fixed-income recipients do not appear to affect the magnitude of the multipliers. This result is not as surprising as it might at first seem since, as we have already noted, the assumption of a simple proportionate real consumption function for rentiers implies constant money expenditures by rentiers at any level of employment and prices. To the extent that rentiers consist primarily of pensioners, widows and orphans who are already spending almost all of their income to subsist, they are unable significantly to increase their money expenditures out of their current money income when employment and prices rise. Furthermore, for small changes in prices, the moral tradition against living off one's capital may be sufficiently strong to prevent these rentiers from using previous savings for consumption. Hence the money expenditures of "income poor" rentiers may be constant as their real consumption declines with rising prices. These rentiers will have a vested interest in preventing any increase in output associated with rising prices [5, p. 328].

On the other hand, wealthy individuals who receive rentier income actually receive most of their income in forms conceptually similar to wages and/or profit distributions.⁷ Hence the consumption pattern of these "income rich" quasi-rentiers may be subsumed under functions (6) and/or (8).

B. *The Price Variable*

The price of the composite commodity is given by equation (3); its differential is:

$$(15) \quad PdM + MdP = dw$$

⁷For example, in 1948, the top 5 per cent of the personal income recipients received 26 per cent of all the interest payments in the United States. Nevertheless, 44 per cent of their total income was derived from employee compensation, while 52 per cent was derived from income which is conceptually similar to profit income (34 per cent entrepreneurial income, 15 per cent dividends, and 3 per cent rental income). Fixed income payments (interest) was only 4 per cent of the total income received by this group [8, pp. 570-71, 676] [12].

If w is assumed constant, then

$$(16) \quad \frac{dP}{P} = - \frac{dM}{M}$$

or, in words, proportionate changes in the price level are inversely related to proportionate change in the marginal product of labor. Since the production function is $Q = \beta N^\alpha K^{1-\alpha}$, the proportionate change (neglecting signs) in M is equal to $(\alpha-1)$ times the proportionate change in N .⁸ Since $\Delta N/N$ can be obtained from equations (11) and (12), the proportionate change in price can be computed via

$$(17) \quad \frac{\Delta P}{P} = - \frac{\Delta M}{M} = - (\alpha - 1) \frac{\Delta N}{N}$$

Thus, for example, if $\alpha = 1/2$, a 2 per cent increase in employment will lead to a 1 per cent increase in price.

An important implication of equation (17) is that increasing employment levels are a mixed blessing to employees as a group. Since prices rise while the money-wage rate is constant, the real wage rate declines. Workers who were employed before the increase in aggregate demand find their real income declining [5, pp. 10, 17] [11, p. 265]. Increased employment, therefore, implies a real cost to the previously employed wage-earners as well as to rentiers. The newly employed, who were formerly members of a "null-income" group [13, pp. 58-60], on the other hand, experience a substantial increase in real income. Hence, the higher the initial level of employment, the fewer the wage-earners who have a vested interest in a further increase in employment and output, and the more who will bear some real cost in any further expansion. Accordingly, given a fixed money-wage rate, there is a heterogeneity of interests between employed and unemployed workers.

If dividend distributions tend to lag behind rising profit levels as the economy approaches full employment, most of the incremental profits will remain the property of the firm. Given diminishing returns and fixed money contracts, therefore, it is only (1) the fictitious legal individual—the corporation, and (2) those entrepreneurs (mainly of unincorporated enterprises) whose incomes are geared directly to profit levels who will tend to reap unmistakable benefits from an unfettered economic expansion.

⁸ From equation (2) we know that $M = \alpha \frac{Q}{N}$ or $MN = \alpha Q$. Hence

$$NdM + MdN = \alpha dQ$$

Dividing both sides of this equation by NM , it can be shown that

$$\frac{dM}{M} = (\alpha - 1) \frac{dN}{N}$$

II. *The Second Model: Money-Wage Rate Variable*

The analysis thus far has assumed a constant money-wage rate. Let us now relax this assumption and take the money-wage rate as a function of the level of employment, i.e., $w = \varphi(N)$. This money-wage function should not be interpreted as the supply function of labor. Following Keynes, our model assumes the labor supply to be a function of the real-wage rate. Nevertheless, Weintraub has demonstrated that a function relating labor offerings to money-wage rates can be derived from the demand function for labor and its implicit real wage phenomena. Whenever aggregate demand changes, *ceteris paribus*, the money demand and supply functions of labor derived by Weintraub are displaced. Our function $w = \varphi(N)$, is the locus of equilibrium points traced out by the simultaneous shifts of these two Weintraub curves [13, pp. 109-29].

A. *The Multiplier*

In this model equation (10) can be written as

$$(10') \quad kN\phi(N) = bN\phi(N) + r(k-1)N\phi(N) + (f-r)F + I$$

Solving for ΔN as before, we obtain the employment multiplier as

$$(12') \quad \frac{\Delta N}{\Delta I} = \frac{1}{[\phi(N) + N\phi'(N)][k - b - r(k-1)]}$$

A priori reasoning suggests that the money-wage rate function should have a positive minimum value and should be an increasing function of the level of employment. Hence, for illustrative purposes, we assume that $\varphi(N) = m + nN^2$. Accordingly equation (12') becomes

$$(12'') \quad \frac{\Delta N}{\Delta I} = \frac{1}{[m + 3nN^2][k - b - r(k-1)]}$$

Thus the additional employment created by a given increment in money expenditures depends on the distribution of income (k), the marginal propensities to consume out of wages and profits, and the initial level the employment. The relationship between changes in the magnitude of the employment multiplier and changes in k , b , and r are the same as in the first model. When the money-wage rate is a function of employment, however, the higher the initial N -level, the smaller the increment in employment from the multiplier repercussions, as more of the increase in money spending spills over into bidding up money wages and less into increasing real output [5, pp. 284-86].

Substituting $Z/k \phi(N)$ for N in equation (10') and solving for ΔZ , we obtain the same money-income multiplier as we did in the first

model, i.e.,

$$(14') \quad \frac{\Delta Z}{\Delta I} = \frac{k}{k - b - r(k - 1)}$$

Hence, the money-income multiplier is the same whether the money-wage rate is constant or not. What is important in determining the magnitude of the money-income multiplier is the marginal propensities of the two income groups who share in the increments of income and the relative distribution (as expressed through k) of the income increment between wage-earners and profit recipients.

B. *The Price Variable*

Dividing equation (15) by $MP = w$ and rearranging terms, we obtain

$$(16') \quad \frac{dP}{P} = \frac{dw}{w} - \frac{dM}{M}$$

i.e., the proportionate change in the price level varies directly with the proportionate change in the money-wage rate and inversely with the proportionate change in the marginal product of labor. Since the relative price increase for any given change in employment will be greater than the relative money-wage increase, therefore any autonomous increase in spending must decrease the real-wage rate while increasing the level of employment [5, pp. 10, 17].

Moreover, if some immobility or other imperfection exists in the labor market, higher starting wages may accompany increasing employment levels, while the money wage paid to previously employed workers need not change very much (a phenomenon that is often observable in white-collar occupations). Thus the average money-wage rate may be an increasing function of employment, while the previously employed workers do not share as fully in wage increases as the newly employed. In this case, the real cost of expansion borne by the previously employed workers, as well as by rentiers, will be greater than in the constant money-wage case, and the lack of zeal for increasing employment displayed by these groups is understandable.⁹

When the employment rate hovers around the 5 to 7 per cent level (as it has since the recession of 1958) most of the voters will be either rentiers, or already employed workers. Consequently the overwhelming majority of the electorate are more interested in preventing inflation than in reaching full employment. It is only the remaining unemployed (many of whom are probably disenfranchised because of race, age, residential or educational requirements), the owners of small unincorpo-

⁹ A. Lerner was helpful in developing this portion of the discussion.

rated enterprises, executives in family or closely held corporations, and the impersonal large publicly held corporations who will benefit from further increases in output and employment. It is not surprising, therefore, that the United States tolerated a 7 per cent unemployment rate throughout most of 1961, while politicians and financial writers claimed that 1961 was a year of unprecedented prosperity. The political fears of inflation overshadow the desire to mop up the remnants of unemployment once a relatively high level of employment has been obtained.

C. Ratchet Effect of the Money-Wage Rate

Finally if we assume that changes in the money-wage rate produce a ratchet effect, then once a given money-wage rate is established in the market place it is inflexible downwards. In such a situation, the employment multiplier presented in equation (12') is applicable to an increment in money expenditures, while the employment multiplier of equation (12) is the relevant one for decrements in money expenditures. Accordingly, the employment multiplier may be asymmetric, its magnitude being larger in a contraction than in an expansion.

Given a ratchet effect for the money-wage rate, equation (16') implies that the price variable may be relatively more stable during a contraction than during an expansion. Thus it is not surprising that the 1957-58 and 1960-61 recessions chiefly affected the level of employment, while the expansions beginning in 1958 and 1961 (at less than full employment) tended to affect both employment and prices.

III. *Conclusions*

Given the simplifying assumptions, the magnitudes of both the employment and money-GNP multipliers vary directly with the marginal propensities to consume of wage-earners and profit recipients, and inversely with the distribution factor (k). The money-wage rate is inversely related to the employment multiplier but does not affect the magnitude of the money-income multiplier. If the money-wage rate is an increasing function of the level of employment, then the higher the initial employment level, the weaker the multiplier repercussion will be on further increases in employment. If the money-wage rate is inflexible downwards, then the employment multiplier may be larger in a contraction than in an expansion.

The apparent complacency about recent unemployment levels in the United States is basically due to the heterogeneity of economic interests among the members of the community. As our analysis has shown, with expansions in economic activity the real income of fixed income groups and already employed workers declines, while the real income of the unemployed workers and the entrepreneurs of unincorporated and small

corporate enterprises increases. As a consequence, once the level of employment is relatively high, most members of the community fear inflation more than they desire further expansion.

APPENDIX: AN ESTIMATE OF THE INCOME AND EMPLOYMENT MULTIPLIERS

A. *The Value of the Parameters*

1. *The income distribution factor (k)*. Weintraub has presented statistical evidence that the value of k is approximately 2 for the United States economy [14].

2. *The marginal propensity to consume out of wages (b) and out of the gross profit residual (r)*. Although a number of statistical studies on the consumption-savings behavior of various economic groups have been published, none of the marginal (or average) propensity estimates have precise applicability to our theoretical concepts. Nevertheless, by using a study by Klein [7] and unpublished estimates of consumption propensities by occupational groups done by I. B. Kravis, in conjunction with the national income data of the Department of Commerce, crude estimates of b and r can be made.

Estimate of b . The consumption behavior of "all employees" can be used as an approximation for the marginal propensity to consume out of wages. Klein's and Kravis's figures tend to suggest that b would be in the .75 to .85 range, or approximately .80.

Estimate of r . The marginal consumption out of the gross profit residual is more difficult to estimate. The aforementioned studies suggest that entrepreneurs' marginal propensity to consume out of their disposable income is between $\frac{1}{2}$ and $\frac{3}{4}$. These estimates, however, are only for entrepreneurs of unincorporated enterprises, self-employed professionals, and farmers, whose total income receipts were only approximately one-third of the total gross profit residual in 1960 (see Table 1). From the other two-thirds of the gross profit residual, a little more than 10 per cent was paid out as dividends and was consequently available for consumption by profit recipients. If we assume that the marginal propensity to consume out of profit distributions is approximately the same as the marginal propensity to consume out of wages (i.e., $4/5$), then the marginal propensity to consume out of the total gross profit residual can be computed as a weighted average:

$$r = (e)(g) + (d)(h)(1 - g)$$

where e is the marginal propensity to consume out of entrepreneurial income, g is the fraction of the gross profit residual going to entrepreneurs, d is the marginal propensity to consume out of profit distribution, h is the fraction of the corporate gross profit residual that is distributed, and $(1 - g)$ is the fraction of the gross profit residual accruing to corporations. Hence,

$$r = (.50 \text{ to } .67)(.33) + (.80)(.10)(.67) = .220 \text{ to } .275$$

$$r \approx .25$$

Thus the marginal propensity to consume out of the gross profit residual (r) would approximate .25.

TABLE 1—GROSS PROFIT RESIDUAL—1960
(billions of dollars)

Business and professional income	\$36.2		
Farm income	12.0		
Rental income	<u>11.7</u>		
			\$59.9
Capital consumption allowances		\$43.1	
Indirect business taxes		45.6	
Corporate profits before taxes		<u>45.1</u>	
			133.8
Gross profit residual			<u>\$193.7</u>
Dividends—\$14.1			

Source: *Federal Reserve Bulletin*, September 1961, pp. 1102-3.

3. *The money-wage rate (w)*. The money-wage rate may be estimated by dividing total employee compensation in 1960 by total employment in that year (\$293.7 billion \div 66.7 million), i.e., $w = \$4.40$, or approximately \$4,400 per annum per employee.

4. *The parameters of the function for the money-wage rate (m , n)*. Our posited money wage function in the second model, $w = m + nN^2$ suggests an a priori relationship, where (1) there is a minimum money-wage rate level (m), and (2) as employment increases and the pools of unemployment dry up, the money-wage rate tends to rise at an increasing rate. Crude estimates for m and n can be made as follows:

Given a legal minimum wage rate of \$1.00 per hour in 1960 and a 40-hour work week, the value of m would be \$2.08 (i.e., \$2,080 per annum). If, in 1960, the level of employment was 66.7 million, while the going money-wage rate was \$4.40 and the minimum was \$2.08, then n would be .000521.

B. *The Magnitude of the Multipliers*

Using the above values for the parameters, the money-income multiplier can be estimated from equation (14) to be 2.11. If w is constant, then the employment multiplier in equation (12) is .239; if w is an increasing function of N , then the employment multiplier [equation (12'')] is .116. Thus, for example, an increment of \$1 billion in exogenous spending would increase GNP by \$2.11 billion, while employment would rise by 239 thousand, if the money-wage rate were constant, or by 116 thousand if the money-wage rate were an increasing function of employment.¹⁰

With these multiplier values, the output, income, and price effects and con-

¹⁰ After this paper was submitted, Suits published a study which corroborates our estimate. Using a 32-equation econometric model of the United States, Suits calculated that an exogenous increase in plant and equipment expenditures of \$1 billion would increase total employment by 115 thousand (as compared to our estimate of 116 thousand). See D. B. Suits, "Forecasting and Analysis with an Econometric Model," *Am. Econ. Rev.*, March 1962, 52, 128.

sequently the anti-recessionary policy implications of President Kennedy's decision, in July 1961, to increase military expenditures by \$3.5 billion (without increasing taxes) can be estimated. If wages increase with employment (as in our second model) then the additional defense expenditures will induce a 1 per cent increase in prices and a \$7.39 billion increase in money GNP. The reduction in unemployment would be only 406 thousand, as much of the increase in total spending will raise the average money-wage rate by almost .7 per cent. Consequently, unemployment (which was 5.1 million in July of 1961) would still be significantly large. On the other hand, if the money-wage rate could be constrained (by moral suasion or legislative action) then, for the same initial increase in expenditures, the employment effect would be more than twice as large; 837 thousand new jobs would be created, while the concurrent price rise would be relatively small (approximately .6 per cent).

REFERENCES

1. P. DAVIDSON, "A Clarification of the Ricardian Rent Share," *Can. Jour. Econ.*, May 1959, 25, 190-95.
2. ———, *Theories of Aggregate Income Distribution*. New Brunswick 1960.
3. R. F. KAHN, "The Relation of Home Investment to Unemployment," *Econ. Jour.*, June 1931, 41, 174-98.
4. N. KALDOR, "Alternative Theories of Distribution," *Rev. Econ. Stud.*, 1955-56, 23, 83-100.
5. J. M. KEYNES, *The General Theory of Employment Interest and Money*. New York 1936.
6. ———, *Treatise on Money*, Vol. II. London 1930.
7. L. R. KLEIN, "Entrepreneurial Savings," in I. Friend and R. Jones, ed., *Consumption and Savings*, Vol. II, Philadelphia 1960, pp. 297-335.
8. S. KUZNETS, *Shares of Upper Income Groups in Income and Savings*. New York 1953.
9. F. MACHLUP, *International Trade and the National Income Multiplier*. Philadelphia 1950.
10. D. H. ROBERTSON, *Money*, 4th ed. Chicago 1959.
11. J. ROBINSON, *The Accumulation of Capital*. London 1956.
12. E. SMOLENSKY, "Industrialization and Income Inequality: Recent United States Experience," *Jour. Reg. Sci. Assoc.*, Proc., 1961, 7, forthcoming.
13. S. WEINTRAUB, *An Approach to the Theory of Income Distribution*. Philadelphia 1958.
14. ———, *A General Theory of the Price Level, Output, Income Distribution, and Economic Growth*. Philadelphia 1959.

EXECUTIVE INCOMES, SALES AND PROFITS

By JOSEPH W. MCGUIRE, JOHN S. Y. CHIU, AND ALVAR O. ELBING*

William Baumol has recently advanced the hypothesis that "the typical large corporation in the United States seeks to maximize not its profits but its total revenues which the businessman calls his sales" [2, p. 187]. Since sales maximization could very well result in bankruptcy for the firm if carried to extremes, Baumol stresses the importance of a minimum profits constraint: profits must be at least adequate to satisfy stockholders and to provide funds for growth. In building the case for his conclusions Baumol states, as a minor point in his argument, that: "Executive salaries appear to be far more closely correlated with the scale of operations of the firm than with its profitability" [1, p. 46]. It is this statement which is the principal concern of this paper. If investigations into the relationships between sales and executive incomes indicate that the correlation between these two variables is greater than between profits and executive incomes, confidence in Baumol's thesis of sales maximization might, to some small degree, be strengthened. Should the reverse be the case, his conclusions might be suspect.

Research into this subject extends back at least to the mid-1920's [8]. In more recent years two authors, Arch Patton and David Roberts have separately conducted extensive investigations into the relationships between these variables [4] [5]. The former has uncovered statistical evidence which indicates that management income is related directly to company size. He has also argued that above-average executive compensation acts as an incentive which leads to above-average profits [4, pp. 51-52]. Roberts found that the relationship between executive compensation and sales appeared to be stronger than the relationship between compensation and profits.

This article reports on a continuation of the research of Patton and Roberts. It is based upon a statistical investigation of the correlations between executive incomes, sales, and profits for 45 of the largest 100 industrial corporations in the United States, and covers the seven-year period from 1953 to 1959 inclusive.

*The authors are, respectively, professor of general business, assistant professor of statistics, University of Washington; and assistant professor of business administration, Tuck School, Dartmouth College. They gratefully acknowledge the financial assistance provided by the Agnes Anderson Fund of the University, the computer services provided by the Western Data Processing Center at the University of California, Los Angeles, and statistical assistance provided by Joann Spier.

The principal sources of statistical data on executive compensation, sales, and profits were *Fortune* and *Business Week*. The former annually publishes the dollar figures for sales and profits of the 500 largest United States corporations. *Business Week* yearly publishes data on executive incomes for approximately 100 firms. The 45 corporations selected for this sample were chosen largely on the basis of elimination. Since it was desired to study the relationships between the variables over a relatively long period, many firms had to be excluded because the figure of one or the other of the variables was not available for them in one or more of the years. However, sales, income, and profit figures for each of 45 of the largest 100 firms were available for the whole period. Although this way of selecting the data might be biased, a careful analysis of these figures does not reveal such a bias.

In the case of executive incomes, wherever stock was given to the executive we computed its market value on the exchange as of the close of business on December 31st of that year, and added this amount to the executive's other income. Another problem of some significance resulted from changes in personnel. For each enterprise we included only the income of the chief executive position as of 1953, and traced the income to this office through 1959. There were, of course, at times changes in the office-holder, and these changes were sometimes reflected in abrupt alterations in the amount of compensation paid—entirely apart from changes in sales or profits. Although this sort of change did not occur as frequently as might be expected in the corporations examined, it probably resulted in some bias in the statistics on executive incomes, and caused the correlations between income and the other variables to be less reliable than otherwise might have been the case.¹ However, since it affected the relationships between income and sales and income and profit equally, it was neutral in its effects on the relative magnitudes of the correlation figures.

In order to explore what appeared to be the most significant economic relationships between executive incomes, sales, and profits, 21 gross (simple) correlation series were computed, and from these were drawn seven sets of net correlations, tracing the relationships between the three variables over a seven-year period for all 45 firms. The arrangements of the data for the seven sets of net correlations are set forth below:

1. One set was based upon the gross relationships between sales, executive incomes, and profits for identical years from 1953 through 1959.

¹ Since sales and profits were, for the most part, increasing in the years between 1953-1959, and since executive incomes were ordinarily reduced with changes in personnel, these changes tended to lower the correlation coefficients between compensation and the other variables.

2. In another set executive compensation was lagged one year behind sales and profits.
3. Executive incomes were lagged two years behind sales and profits.
4. Sales and profits were lagged one year behind executive compensation.
5. Year-to-year changes in incomes were correlated with year-to-year changes in sales and in profits.
6. Year-to-year changes in executive incomes were lagged one year behind year-to-year changes in sales and profits.
7. Year-to-year changes in executive incomes were lagged two years behind changes in sales and profits.

Sets 2 through 7 (with the possible exception of number 4) arrange the data in a manner which is new, and enable us to explore what seem to be significant relationships between executive incomes, profits, sales, and time.

I. *Direct Relationships*

In this section we present the statistical evidence on simple or direct relationships between sales or revenues (R), executive incomes (Y), and profits (P) obtained from our sample. In each case to follow, the data on revenues, profits, and compensation for all 45 enterprises were correlated for each year 1953-59, which resulted in a set of r 's for each series of correlations.

There are three simple or gross correlations possible between executive compensation, profits, and revenues. Compensation may be correlated with either profits or revenues, or revenues and profits may be related. Suppose, for the moment, it is assumed that either the correlation between executive incomes and revenues, or between incomes and profits, is the pertinent relationship for this investigation. In order for a simple correlation to be appropriate, it must also be assumed that the intercorrelations between the extraneous variable (either profits or revenues) and the other two variables are not economically significant, and that either profit or revenue is correlated independently with compensation. Table 1 presents most of the pertinent r 's resulting from these assumptions.

The first two columns of Table 1 indicate the simple correlation coefficients for executive compensation and sales, and executive compensation and profits. Columns (3) and (4) present coefficients for the same variables, but compensation is lagged one year, and in (5) and (6) it is lagged two years. In columns (7) and (8) sales and profits are lagged one year behind compensation. The final two columns show the correlation coefficients between the changes in executive compensation and the changes in sales and profits from year to year. The so-called

TABLE 1—CORRELATIONS BETWEEN EXECUTIVE INCOMES AND REVENUES, AND BETWEEN INCOMES AND PROFITS, FOR THE YEARS 1953-1959 INCLUSIVE

Year	(1) r_{YR}	(2) r_{YP}	(3) r_{Y_1R}	(4) r_{Y_1P}	(5) r_{Y^2R}	(6) r_{Y^2P}	(7) r_{YR_1}	(8) r_{YP_1}	(9) $r_{\Delta Y \Delta R}$	(10) $r_{\Delta Y \Delta P}$
1953	.71282	.62146	—	—	—	—	.66449	.68053	—	—
1954	.66742	.64593	.72496	.58831	—	—	.70094	.67702	.19942	.22207
1955	.64515	.63799	.59984	.59635	.67734	.54942	.59051	.51435	.15085	.04603
1956	.58709	.55705	.60326	.63710	.58611	.61780	.58084	.57250	.11705	.03940
1957	.59215	.52141	.56873	.45625	.60526	.54753	.53061	.48951	.34173	.32816
1958	.45623	.48788	.47968	.46791	.45846	.40858	.44864	.43586	.88805	.20109
1959	.58819	.55211	.57972	.55269	.59944	.54041	—	—	.42186	.34022
Average	.6123	.5476	.5980	.5533	.5888	.5359	.5812	.5683	.4198	.1980

"averages" below the columns were found through the use of R. A. Fisher's "z" transformation, wherein:

$$(1) \quad z = \frac{1}{2} [\log_e (1 + r) - \log_e (1 - r)]$$

or, conversely

$$(2) \quad r = (e^{2z} - 1) / (e^{2z} + 1)$$

The advantage of this procedure is that the form of the distribution of z is normal, and independent of the degree of correlation. Also, the average of the z 's is not affected by extreme values, whereas the average of the r 's is so affected [3].

Note that in each set of two correlations the average gross correlation between executive compensation and sales is higher than between executive compensation and profits, and that of the 60 r 's reported in the body of Table 1, in only five instances is the correlation between income and profits higher than between income and revenues.

In order to test the significance of these correlations we used a 5 per cent level one-tail t test, wherein the computed t must be greater than 1.64 in order to be considered significant.² The formula for t is

$$t = \sqrt{\frac{\bar{r}^2(N-3)}{1-\bar{r}^2}}$$

Table 2 presents the averages for all simple correlations between either sales or profits and executive incomes, and indicates the corresponding value for t . The average correlation coefficients in Table 2 are significant, with the exception of those in column (C), rows (5) and (6). All of the variations of the relationships between sales and

² Since it was assumed that the significant variables would change in the same direction there appeared to be no reason to use a two tail test [6, pp. 200-01].

TABLE 2—VALUES OF AVERAGE CORRELATION COEFFICIENTS AND CORRESPONDING COMPUTED VALUES OF t

	(A) \bar{r}_{YR}	(B) t	(C) \bar{r}_{YP}	(D) t
(1) Current year	.6123	5.05	.5476	4.22
(2) Y , year 1; R and P , year 0	.5980	4.81	.5533	4.30
(3) Y , year 2; R and P , year 0	.5888	4.70	.5359	4.12
(4) Y , year 0; R and P , year 1	.5812	4.63	.5683	4.46
(5) ΔY , ΔR , ΔP , current years	.4198	2.99	.1980	1.31
(6) ΔY , years 2-3; ΔR and ΔP , years 1-2 ^a	.3298	2.26	.2006	1.32
(7) ΔY , years 3-4; ΔR and ΔP , years 1-2 ^a	.3477	2.42	.2907	1.97

^a These average coefficients are based on correlations not presented in Table 1.

executive incomes presented in Table 2, including those in which incomes are lagged by one or two years, where incomes lead revenues by one year, and where changes between the years are used concurrently, and with one and two year lags in executive incomes, prove to be significant. Except for the two cases cited, the correlations between executive incomes and profits are also significant, so that it is not possible to arrive at any definite statistical conclusion on the basis of this test.

The simple correlation analysis and t tests indicate only the statistical significance of the relationships between executive incomes, profits, and sales, and is not informative as to their economic reasonableness or importance. Furthermore, the direction of apparent causation cannot thus be ascertained. It is evident that there are six possible direct relationships between these three variables, all of which might be economically reasonable. Thus, executive incomes might be considered to be dependent upon profits or revenues, or they might be taken to cause certain profit and revenue values to result; and either profits or revenues might directly affect the other's magnitude.

Although none of the six possible direct relationships between the variables can be discarded or accepted on either economic or statistical grounds at this point, note that: (1) the \bar{r}_{YR} in each case investigated is higher than its counterpart \bar{r}_{YP} ; (2) the significance of the t 's for the correlations between sales and executive incomes is consistently higher than for the correlations between profits and executive incomes; and (3) the t 's for two of the items in the \bar{r}_{YP} column are below the acceptable level of significance.

II. Net Correlations

In order to explore further the relationships between incomes and sales or profits, and to determine the direction of apparent causation (from profits or revenues to incomes, or from incomes to revenues or

TABLE 3—AVERAGES OF THE COEFFICIENTS OF NET CORRELATION AND THEIR RELATED *t* VALUES

	$\bar{r}_{YR \cdot P}$	<i>t</i>	$\bar{r}_{YP \cdot R}$	<i>t</i>
(1) Current year	.2479	1.66	.0564	.368
(2) <i>Y</i> , year 1; <i>R</i> and <i>P</i> , year 0	.2577	1.73	.0386	.250
(3) <i>Y</i> , year 2; <i>R</i> and <i>P</i> , year 0	.2814	1.90	-.0030	-.019
(4) <i>Y</i> , year 0; <i>R</i> and <i>P</i> , year 1	.2104	1.39	.0719	.469
(5) ΔY , ΔR , ΔP , current years	.3703 ^a	2.88	-.0141	-.091
(6) ΔY , years 2-3; ΔR and ΔP , years 1-2	.2898	1.96	.0314	.203
(7) ΔY , years 3-4; ΔR and ΔP , years 1-2	.2305	1.54	.0820	.532

^a Because of the high $r_{YR \cdot P}$ for 1957-58, this average appears to be unusually high, and therefore may be of doubtful validity.

profits) it seemed necessary to employ statistical techniques by which the effects of one variable are removed in order to ascertain the proper relationships between the other two.³

If, for example, the purpose is to determine the relationship between sales and executive incomes, but if it must be assumed that the inter-correlation between sales and profits will significantly affect the reliability of the results obtained, unless taken into account, then the effect of profits on sales should be removed. This can be accomplished to a certain extent through net correlation, the formula for which is:

$$r_{ij \cdot k} = \frac{r_{ij} - r_{ik}r_{jk}}{\sqrt{1 - r_{ik}^2} \cdot \sqrt{1 - r_{jk}^2}}$$

where $r_{ij \cdot k}$ is the coefficient of net correlation between executive incomes and either sales or profits, with the effects of the third variable removed. The r 's on the right of the equation, of course, are the gross correlation coefficients. In Table 3 the averages of the coefficients of net correlation obtained through the use of this formula are presented, along with the related t 's

Note that the t 's for $\bar{r}_{YR \cdot P}$ are significant in every case except those in rows (4) and (7), while none of the t 's for the $\bar{r}_{YP \cdot R}$'s are significant. Thus, if the assumption that the variables involved are interrelated is proper (and it would seem to be most likely), the results of Table 3 indicate that sales and executive compensation are significantly correlated in five of the seven cases given; while profits and executive compensation are not significantly correlated. Therefore, Baumol's thesis is supported.

The two instances where the $\bar{r}_{YR \cdot P}$'s are not significant would be expected by economists. One of the cases (row 7) relates the changes in

³ This suggests the use of bunch map and confluence analysis [9, p. 149], but such a method was found to be inappropriate for this study.

sales between years 1 and 2 with the changes in executive incomes of two years later (3-4). The time lag between independent and dependent variables in this case is so extended that it would not seem probable that a high correlation would exist. Second, and more interesting, the situation in row 4 is not significant. This premise is closely allied to the Patton hypothesis that high compensation stimulates executives to work harder, and thus to produce larger sales and profits. Since all the probable permutations between executive compensation, profits, and revenues wherein compensation is taken as the independent variable have not been tested, it is not possible to state that high executive compensation is not an inducement which leads to larger profits. Nevertheless, for this one case (which appears to be the most likely case) where the executive compensation of the first year is related to sales and profits in the second, the correlation coefficients were not significant.

The Student t test in effect is informative of the distance of a given value from a hypothetical value of zero, and is presented here in terms of the standard error of \bar{r} . However, the t test is an "all or none" type of test. It indicates whether an observed value is significant or not, but it does not permit one to state that this value is more significant than another which also may be significant. In order to make comparisons between two values of \bar{r} (average correlation coefficient) we utilized a test which ended with t values based upon the differences (d) between the \bar{r} 's resulting from the net correlations of executive compensation and sales and of executive compensation and profits of identical time periods. In effect, our null hypothesis was that the expected value of the differences between the net correlation coefficients of $YP \cdot R$ and $YR \cdot P$ is zero; and the actual t values which we obtained by subtracting $YP \cdot R$ from $YR \cdot P$ would indicate whether we would accept or reject the hypothesis. The differences between the average net correlation coefficients (\bar{r} 's) for $YP \cdot R$ and $YR \cdot P$, and the corresponding t values for these differences are presented in Table 4.

In this table the t values indicate the significance of the differences between the average correlation coefficients of $YP \cdot R$ and $YR \cdot P$, or, in less technical terms, how much more significant $YR \cdot P$ is than $YP \cdot R$. Unfortunately, since even here t is an "all or none" test, we can state only that the differences between the two comparable \bar{r} 's are either significant or not significant in terms of the value of t (1.64) at the 5 per cent level. Thus, in Table 4, there exists a significant difference between the \bar{r} values of $YP \cdot R$ and $YR \cdot P$ in all cases except rows (1), (4), and (7). The latter two instances were not significant in Table 3, and the differences between the \bar{r} values, as might have been expected, were not sufficiently large to be significant. In the first instance (row 1) the net correlation coefficients for $YP \cdot R$, while not significant, were relatively

TABLE 4—DIFFERENCES BETWEEN THE \bar{r} VALUES OF $YR \cdot P$ AND THE RELATED t VALUES FOR THESE DIFFERENCES

	\bar{d}	t
(1) Current year	.1950	1.29
(2) Y , year 1; R and P , year 0	.3232	2.18
(3) Y , year 2; R and P , year 0	.4692	3.45
(4) Y , year 0; R and P , year 1	.1423	.93
(5) ΔY , ΔR ; ΔP , current years	.5483 ^a	4.25
(6) ΔY , years 2-3; ΔR and ΔP , years 1-2	.2622	1.76
(7) ΔY , years 3-4; ΔR and ΔP , years 1-2	.1492	.975

^a Because of the high $r_{YR \cdot P}$ for 1957-58, this average appears to be unusually high, and therefore may be of doubtful validity.

high, and those between $YR \cdot P$, while significant, relatively low; so that the differences between the two would not be expected to be significant.

We therefore appear justified in stating, from the results presented in Tables 3 and 4, that in most instances tested $YR \cdot P$ is significant and $YP \cdot R$ is not, and that furthermore, in most cases even the differences between $YR \cdot P$ and $YP \cdot R$ are significant. Finally, the evidence presented would seem to support the likelihood that there is a valid relationship between sales and executive incomes as Baumol assumed, but not between profits and executive incomes, although, because of the statistical problems involved, the tests employed do not completely rule out the possibility of a valid relationship between profits and executive incomes too.

If then sales and executive incomes are related, in what manner are these two variables combined most satisfactorily? First, it would appear from this sample that the line of apparent causation runs from sales to incomes rather than from incomes to sales. In other words, when the board of directors of an enterprise (or whatever person or persons make such a decision) determines executive compensation, this decision is affected significantly by current or past sales, or by realized changes in sales. Executive compensation is primarily a reward for past sales results, and is not necessarily an incentive to future sales efforts, or, if it is an incentive, it has not proved to be too satisfactory for these 45 firms for the period examined in this study.

Second, if executive compensation is most significantly related to current or past sales, which of these is the most important cause of executive incomes? We have examined six situations which might possibly apply: (1) executive compensation is a function of current sales; (2) compensation is dependent upon last year's sales; (3) it is dependent upon the sales of two years before; (4) the change in compensation between any two years is a function of the change in sales between the

same years; (5) the change in compensation between any two years (1 and 2) is dependent upon the change in sales that occurred between the preceding two years (year 0 and 1); (6) the change in compensation between years 3 and 4 is a function of the change in sales between years 1 and 2. The only one of these situations which can be eliminated as not consistently significant is (6). The correlations between the other possibilities are such that one cannot be said to be more statistically significant than the others. However, we can speculate upon these relationships.

Executive compensation in any one year is the resultant not only of current, but also of past decisions. In any one year executive compensation changes (or does not change) from a base established in the preceding year, and this compensation in turn is made up of an incremental increase or decrease (or no change) over the year before. Even when a new top executive takes over an enterprise, his basic income is in some manner related to past decisions on executive incomes in general within the firm [7]. Thus, if executive incomes are a function of sales, it is not surprising to find that these incomes are significantly related not only to current sales or changes in sales, but also to past sales levels and changes. It is likely, however, that the relationship between past sales and current compensation becomes of lesser significance as the time interval between the two increases. In fact, this may be the reason why relationship (6) is not as consistently significant as the other sales-compensation correlations.

REFERENCES

1. W. J. BAUMOL, *Business Behavior, Value and Growth*. New York 1959.
2. ———, "On the Theory of Oligopoly," *Economica*, Aug. 1958, 25, 187-98.
3. R. A. FISHER, *Statistical Methods for Research Workers*, 11th ed. Edinburgh 1950.
4. A. PATTON, *Men, Money, and Motivation*. New York 1961.
5. D. R. ROBERTS, *Executive Compensation*. Glencoe 1959.
6. R. SCHLAIFER, *Introduction to Statistics for Business Decisions*. New York 1961.
7. H. A. SIMON, "The Compensation of Executives," *Sociometry*, March 1957, 20, 32-35.
8. F. W. TAUSSIG AND W. S. BARKER, "American Corporations and Their Executives: A Statistical Inquiry," *Quart. Jour. Econ.*, Nov. 1925, 40, 1-51.
9. S. VALAVANIS, *Econometrics*. A. H. Conrad, ed. New York 1959.

ECONOMIC GROWTH IN THE UNITED STATES*

A Review Article

By MOSES ABRAMOVITZ

Few things have been more common in recent economics literature and in political pronouncements than expressions of dissatisfaction with the pace of U.S. economic growth, accompanied by ringing demands that we "can and must" speed the pace of our development. And, of course, few things have been less common than objective analyses of the grounds for dissatisfaction or coherent and comprehensive programs for accelerating our growth. This is the gap that Edward Denison's book attempts to fill. His work is, in fact, a notable contribution to a vexed and difficult subject. In astonishingly brief compass, Denison presents a picture of past trends in output growth and in the development of the various sources to which the growth of productive capacity can be traced, a projection of the probable future flows from these sources, and a measured evaluation of the possible steps that might be taken to make the flows still larger. Moreover, in grappling with these complicated and still largely unexplored issues, he has achieved a quite remarkable combination of technical finesse and depth with clear and almost deceptively simple exposition. The book is, therefore, a minor miracle of lucidity and persuasiveness which calls for the most serious study by economists while it engages the attention of a much wider audience.

It would perhaps be too much to say that, with the appearance of Denison's book, the whole subject of U.S. economic growth has been decisively clarified, that we now know where we have come from, where we are going, and what we can reasonably try to do about it. Unfortunately, our statistical records do not permit some issues regarding past trends to be resolved. Crucial questions regarding the sources of growth are settled in Denison's book by the author's *ex cathedra* pronouncements rather than by reference to those empirically tested production functions on which the author would prefer to rely but towards which economists are only now beginning to grope. Unavoidably built on shaky foundations, Denison's judgments about future trends and about policy issues, though models of caution and restraint, are necessarily of uncertain value. Nevertheless, Denison's book does more than any other to bring our knowledge—inadequate as it is—to bear on the amazingly wide range of issues involved. It is, at the very least, a beautifully or-

*A review of E. F. Denison, *The Sources of Economic Growth in the United States and the Alternatives Before Us*. Supplementary Paper No. 13. New York: Committee for Economic Development, 1962. Pp. 308.

The reviewer gratefully acknowledges the help of his colleague Paul David, whose suggestions made it possible to clarify a number of points of substance and exposition.

dered program for research and a reasonable, indeed an indispensable, basis for discussions of policy.

While Denison's work challenges attention and comment in its sections dealing with the trend of past growth and in those which attempt projections of the future, the core of the book, as its title suggests, consists in its analysis of the "sources" of past growth and in its discussion of the various measures we might now take to make the flow from these sources more rapid in the future. It seems best, therefore, to confine this review chiefly to these two subjects.

I. *The Sources of Growth in the United States*

The growth Denison seeks to explain is growth in *capacity* to produce or, as he sometimes calls it, *potential production*. The production with which he is concerned is *measured* output, that is, the output whose value is aggregated to form the net or gross national product. The *sources* of growth are changes in those elements into which output can be immediately resolved, that is, inputs of factors of production and factor productivity, changes in the latter being further attributed to the advance of knowledge, scale effects, and gains or losses from reductions or enlargements of market restraints, lags in application of knowledge, and similar causes.

Denison's approach represents an expression of the method of analysis introduced by Jacob Schmookler [8] and by various students at the National Bureau of Economic Research and given its most complete and systematic statement in John W. Kendrick's recently published work [4].¹ The novelty and contribution of Denison's analysis is best brought out by comparison with that of Kendrick and his colleagues. In simplest form, these writers distinguished two broad categories of inputs: labor services measured in employed man-hours; and services of capital stock, including land, measured as the real net stock available after depreciation. The two categories of inputs were combined into an index of total input of resources, weighting each category by its base-period earnings. The essential meaning of the index of total factor input is that it shows how national product would have grown had earnings per unit of each input remained at its base period level with changes only in the quantities of the inputs. If these index numbers are now divided into corresponding index numbers for national product, one obtains an index of output per unit of input, sometimes called an index of productivity.

Denison did not follow Kendrick in one further step: Kendrick's labor input is a weighted aggregate built up from the man-hours utilized by 13 separate major segments of the economy and by industry groupings within 5 such segments, the weights being average hourly earnings; and his input of capital is likewise a weighted aggregate of net capital stock available in some 5 major segments and 20 manufacturing industry groups, the weights being average capital compensation (or nonlabor income) per unit. The net effect of this weighting scheme is that input increases if *either* the physical quantity of

¹F. C. Mills [7] did the first work of this kind at the Bureau followed by Fabricant [2] and the present writer [1], both of whom took advantage of Kendrick's work then in progress.

labor or capital used in any sector grows *or* if the proportion of labor or capital used in sectors with relatively high returns becomes larger. The rationale for the use of such weighted indexes of inputs is that interindustry differences in average earnings are thought to represent differences in the quantity of actual input or contribution to output associated with a nominal unit of labor or capital reflecting ultimately differences in the quality of such units (cf. Kendrick [4], p. 33). This is clearly a moot point with which Denison takes issue.

Indexes of input and productivity obtained by this procedure can be given precise significance only to the degree that several far-reaching assumptions are valid. First, units of inputs in each class distinguished must be of uniform quality and their relative rates of remuneration in the base period proportionate to their marginal productivities. Next the quality of resources in each class should remain unchanged over time and relative marginal productivities should not alter because the relative quantities of the factors vary or because shifts in the production function are not neutral.² To the extent that these conditions of constancy do not obtain, the index of "productivity" derived will reflect the effects of changes in the quality or relative quantities of factors of production. Even so the index of productivity will only represent the effect of "costless" advances in applied technology, managerial efficiency, and industrial organization ("cost"—the employment of scarce resources with alternative uses—is, after all, the touchstone of an "input") when, in addition, we can neglect the undifferentiated consequences of other factors: the so-called "unconventional inputs," such as investments or expenditures for education, health and research, the effects of economies of scale resulting from the growth of all inputs, and the effects of changes in the effectiveness of resource use associated with changing degrees of monopoly power and of other restrictions on output or the most economical use of resources. In recognition of these ambiguities, the index of productivity produced by Kendrick and his predecessors has been dubbed by some a "measure of ignorance," and it is often referred to simply as the Residual.

In its very broad lines, Denison's method is similar. Like Kendrick, he combines labor input and capital input, weighting each by its base-year earnings, to obtain an index of total factor input whose meaning is the same as that of Kendrick's. And, like Kendrick, he obtains an index of productivity by dividing an index of real national product by his index of total factor input. Denison's measures of labor and capital input, however, are differently constructed, and the Residual is broken down in an attempt to reveal its constituent elements. He substitutes a measure of the gross (that is, undepreciated) capital stock for measures of the net capital stock usually employed.³ He rejects the

² Troubles from this source were minimized by Kendrick, and by Denison as well, since each first divided the long period they studied into subperiods and constructed separate indexes of inputs for the various subperiods, weighing by the relative earnings of the input classes in each subperiod. They then chained the subperiod indexes so derived to obtain a continuous index for the entire span of years they studied.

³ Like Kendrick, Denison distinguishes several classes of capital stock, which he combines by weights based on rates of return. But Denison's classification is by type of capital, Kendrick's by industry.

TABLE 1—ALLOCATION OF GROWTH RATE OF REAL NATIONAL INCOME
AMONG THE SOURCES OF GROWTH

	Percentage Points in Growth Rate		
	1909-29	1929-57	1909-57
1. Real national income	2.82	2.93	2.89
2. Increase in total inputs	1.63	.92	1.22
3. Labor input (unweighted man-hours)	.88	.47	.65
4. Employment	1.11	1.00	1.06
5. Hours	— .23	— .53	— .41
6. Capital	.75	.45	.57
7. Increase in output per unit of input (The Residual)	1.19	2.01	1.67
8. Ratio: 7 ÷ 1	.42	.69	.58
9. Increase in total input (Kendrick)	1.96	1.10	1.46
10. Output per unit of input (1 minus 9) (the Residual)	.86	1.83	1.43
11. Ratio: 10 ÷ 1	.31	.62	.50

Sources:

Lines 1-7: Denison, Table 19.

Line 9: Based on Kendrick [4, Table A XIX].

Line 10: Line 1 minus line 9.

procedure—of weighting man-hours in separate industries by their average hourly earnings—by which Kendrick tries to allow for the effect of shifts in the industrial composition of the labor force on the quality of labor input. Denison's procedure is more direct and, in a sense, more radical. He starts with a measure of the over-all contribution of aggregate man-hours and then adjusts it for changes in several specified elements of quality: the increased experience and better use of women; changes in the age-sex composition of the labor force; greater efficiency per man-hour associated with reductions in hours worked per week and year; and the rise in the level of education. The treatment of labor input goes a certain distance towards freeing the Residual from the impact of shifts in the quality of inputs associated with demographic changes and from unconventional inputs—in this case, expenditures for education. But Denison breaks open the Residual still more widely by making allowances for the effects of changes in various kinds of market restrictions on the movement of productivity, for economies of scale, and for the advance of knowledge.

The effect of these differences can be seen most clearly by displaying Denison's results in tabular form. Table 1, lines 1-8, shows the outcome of his analysis as it would have appeared had he stopped at the same stage as earlier writers had done. It shows the very large part of total output that remains to be explained by the Residual when the only inputs accounted for are capital⁴ and undifferentiated man-hours and when the contributions of these inputs to growth are given weights based on their base-period earnings.⁵ For comparison,

⁴ Denison's capital, as already noted, is an index of gross stocks in five categories weighted by rates of return.

⁵ It is worth a digression to notice that Denison's figures do not suggest any long-term

TABLE 2—ALLOCATION OF GROWTH RATE OF REAL NATIONAL INCOME
AMONG THE SOURCES OF GROWTH

	Percentage Points in Growth Rate	
	1909-29	1929-57
Real national income	2.82	2.93
Increase in total inputs	2.26	2.00
Labor input, adjusted for quality	1.53	1.57
Employment	1.11	1.00
Hours	— .23	— .53
Effect of shorter hours on quality	.23	.33
Education	.35	.67
Increased experience and better use of women	.06	.11
Changes in age-sex composition of labor force	.01	— .01
Capital input	.73	.43
Nonfarm residential structures	.13	.05
Other structures and equipment	.41	.28
Inventories	.16	.08
U.S.-owned assets abroad	.02	.02
Foreign assets in U.S.	.01	.00
Increase in output per unit of input	.56	.93
Restrictions against optimum use of resources	NA	— .07
Reduced waste in agriculture	NA	.02
Industry shift from agriculture	NA	.05
Advance of knowledge	NA	.58
Change in lag in application of knowledge	NA	.01
Economies of scale—independent growth of local markets	NA	.07
Economies of scale—growth of national market	.28	.27

Source: Denison, Table 32. Certain lines in Denison's table constituting subtotals not reproduced. One line referring to the contribution of "Land" is omitted. Denison puts the contribution at zero on the ground that available land has been constant during the period covered.

lines 9-11 provide figures based on Kendrick's input calculations and Denison's (that is, Department of Commerce) national income estimates. The dif-

retardation in the rate of growth of national income. The pronounced retardation in the growth of both labor and capital inputs is offset by an equally pronounced acceleration in the growth—from all causes—of output per unit of input. Kendrick's input calculations, taken in conjunction with the Denison (Commerce) income estimates, lead to the same conclusions. If one may regard the periods distinguished by Denison as suitably long and comparable, it would appear that current discussion of retardation in growth is actually concerned with the experience of a relatively few recent years, a period hardly adequate, in view of the unsteadiness of growth rates, to provide evidence of a secular drift. Kendrick's own estimates of net national product, which are based on Kuznets' work up to 1929 do, indeed, show some retardation between the period 1909-29, when the growth rate was 3.45 per cent per annum, and 1929-57, when it was 2.93. But again, this was entirely a question of retardation in the growth of labor and capital inputs, offset—but not completely—by acceleration in productivity growth.

ference between Kendrick's and Denison's estimates of the contributions of input—and the complementary difference between the contributions of the Residual—is not large. Such as it is, it derives in small part from the somewhat different procedures they use to estimate capital input. The major part of the difference, however, represents the fact that Kendrick's labor input is derived from a weighted sum of man-hours in a considerable number of industries, the weights being hourly earnings. The contribution of labor is, therefore, augmented by the shift of labor over time from industries in which average earnings were relatively low to those in which they were relatively high.

By contrast with this relatively simple set of figures stands Table 2 in which Denison summarizes his own work.⁶ Comparison of the two tables reveals a number of striking differences. Most prominent is the large reduction in the apparent importance of the increase in output per unit of input to under half its former size. Three adjustments in labor input account for the bulk of the change. Two large adjustments are made to allow for the alleged effects of shorter hours and of the rise in the level of education upon the quality of labor input per hour worked. A third, smaller, adjustment takes account of the fact that women in the labor force have come typically to represent a more experienced group employed at work which makes better use of their talents. The Residual, moreover, no longer seems just that. It has seven different parts, each with a name, the two largest of which are "economies of scale" and "advance of knowledge." Moreover, even the items in the table which have small numbers attached to them provide substantial pieces of information. They tell us that certain characteristics of the economy, which might have been deemed important for growth, in fact were not. Denison, in short, appears to have done what every economist concerned with the subject has hoped would be done, namely, broken down the Residual into its component elements. The inevitable question is whether his attempt is successful. I propose to tackle this question in brief comments on the major elements in Denison's adjustments.

Hours of Work and Labor Productivity

Denison argues with considerable plausibility that when hours of work are very long, workers' output per man-hour is lower than it might be. Presumably they cannot work either as hard, as carefully, or as cleverly as they would were their daily, weekly, and annual stints shorter. Consequently, when hours are reduced, one may suppose that some parts of the potential loss occasioned by the reduction in hours are offset by greater productivity per man-hour, and this offset ought to be counted as an increase in labor input.

To implement this position, Denison adopts a specific formula which expresses the hypothesis that the productivity offset to a given reduction in hours varies inversely with the number of hours in the working year. He places the point at which a slight reduction in hours is just offset by the rise in output per man-hour at the level prevailing in 1929 (when the level was 2592 hours

⁶ There are some very small differences in individual figures since Table 1 is drawn from Denison's Table 19 and Table 2 from his Table 32. In the latter, figures are slightly adjusted to eliminate a portion of the increase in inputs considered not to be represented in the increase in measured national product.

a year or 48.6 a week) and assumes that, at the level prevailing in 1957 (2069 hours per year or 39.8 per week), a slight change in hours was offset to the extent of 40 per cent by an opposite change in man-hour output. He interpolates between these years and extrapolates backward and forward. The result, as Table 2 indicates, is that the reduction in hours between 1909 and 1929 is treated as fully offset by an associated improvement in productivity, and that between 1929 and 1957 is treated as offset by slightly over 60 per cent. On this assumption, of course, the implications for the future are serious. Since productivity offsets are now much smaller than they were and are becoming still smaller, labor input is destined to follow the curve of man-hours more closely and future reductions in hours, to the extent that they occur, will weigh more heavily on our growth rate.

Denison, of course, is properly reserved about this calculation. He claims no more for it than that it constitutes a formula which *may* be reasonably correct. ("... its merit is that it is consistent with general pattern of expectations and is not, I think, demonstrably wrong"). It is not demonstrably wrong, but the fact remains that the theory on which Denison relies is no more than speculation and his special formula no more than a guess. Granted that there has been an historical association between shorter hours and greater intensity of work, it is plausible to argue that the underlying cause has been a stream of innovations in technology, factory organization and discipline, layout and flow of work, modes of remuneration (piece rates and bonus schemes), selection and assignment of workers and other aspects of personnel management which acted to speed the pace of work, to control its quality, and to reduce waste in the use of materials and equipment.⁷ Innovations of this character have, of course, joined with larger quantities of capital, cost-reducing technology and other forces to raise the marginal productivity schedule for labor. On their side, workers have reacted, partly through the collective processes of union organizations, by taking a portion of their potential gains in greater leisure. A priori, however, it is not at all clear that this part exceeds the portion of the gain in labor's marginal product associated with those improvements in management and technology which made for greater intensity and quality of work. Yet it is only in so far as declines in hours did pass this moving point that they could be said to have an independent effect on output per man-hour. Denison's calculations may, therefore, overstate the rise of labor input as much as the simple identification of labor input with man-hours understates it.⁸ These views are, of course, no less—but possibly also no more—speculative

⁷ In another connection Denison is led to write as follows: "It would be difficult to find technological innovations with an impact on production exceeding that of the introduction of interchangeable parts, or of the assembly line, or of time and motion study and all that has flowed from it. . . . The design of factory buildings has been radically changed to permit the easy flow of materials. . . . Improvements in work scheduling, [and] in personnel relations . . . are in this category . . ." [p. 232].

⁸ One minor point is that, though man-hours on the job itself fell, there were many years when true leisure time did not increase quite as much. Travel time tended to increase for all grades of labor, and work-connected activities outside of regular hours probably became more demanding for a larger group of salaried officials.

than Denison's. I am, therefore, led to take my stand with Denison at another point, where he writes (p. 39): "Few studies offer more promise of adding to welfare and contributing to wise decisions in a matter that may greatly affect the future growth rate than a really thorough investigation of the present relationship between hours and output."

Education.

Doubtless every economist who has looked at the large size of the Residual in earlier studies has speculated on the possibility—indeed the probability—that a large part of the explanation might be found in the rapidly soaring levels of education attained by representative members of the labor force. Denison has now attempted to measure the contribution made by education to our past growth.

His procedure begins with an estimate by Houthakker [3] (based on a $3\frac{1}{3}$ per cent Census sample of males) of the mean incomes earned before tax in 1949 by men classified in 8 groups according to age and years of school completed. This Denison reduces to a set of typical differentials by level of education for males of the same age. He treats these differentials as preliminary indications of the difference which specified amounts of schooling would make to the output of randomly chosen individuals. It is only a preliminary indication, however, because the observed differences between mean incomes for various levels of schooling are not due to differences in education alone. There are good reasons to think that differences in schooling completed are correlated with ability, energy, and motivation, also with the education and income of parents, and with parents' occupations and age of marriage. (Some of these correlates, however, may themselves be partly attributable to education—or to education of an earlier generation—for example, motivation and parents' schooling.) Denison deals with these complexities forthrightly and assumes that only 60 per cent of the observed differences are due to differences in schooling.

He next combines the adjusted differentials for 1949 with estimates of the distribution at various past dates of males, 25 and over, by years of school completed. In this way, he obtains estimates of past change in average income due to the rise in education measured in school years completed. These estimates, however, remain to be adjusted to allow for the rise in the number of school days represented by each school year, a figure which has been rising as fast as the average number of school years completed. And Denison makes the necessary adjustment by assuming that increasing the number of days spent in school per year raised a man's contribution to production as much as did an equal percentage increase in number of years spent in school.

These calculations, on their face, indicate that the contribution of the rise in levels of schooling was very high indeed. They suggest that the rise in output per man due to education was proceeding at a pace of .93 per cent per annum from 1929 to 1957 (fully 1 per cent per annum from 1940 to 1950 and .99 per cent from 1950 to 1960). Allowing for the weight of labor's share in the national income (73 per cent), the indicated contributions of education

to the growth of national product during 1929-57 would have been .68 percentage points, or 23 per cent of the growth rate of aggregate national product and 42 per cent of the growth rate in product per person employed. They indicate that the rising level of education contributed more than any other source to the rise in output per person employed since 1929, more even than the "advance of knowledge," and more than any single source, excepting only the increase in the labor force itself, to the increase in aggregate output. If we may trust the calculations, their implications for economic policy—at least when we have our eye on long-term results—are dazzling. My own reluctant conclusion, however, is that we cannot rest our faith in the importance of education for economic growth on these figures. They are subject to question at each important point.

First, the basic table of differentials by level of education is itself a weak basis for the calculation. At best, it gives us a reading on educational differentials at one point in time. The data on which it is based reflect "response errors which abound in the reporting of income and education in household surveys and censuses . . ." [6, p. 963]. The census data appear in the form of medians for age-education-income classes which need to be transformed by estimation into means. Variability of income around the estimated means for each age-group classified by educational level is large [3, Table 1]. Given the small size of the samples in many of the cells, the question arises whether the mean figures are, in fact, representative or biased by accidental differences due to type of education, quality of schooling, occupation and other factors.

Secondly, the adjustment to allow for the influence on the observed differentials of factors extraneous to education, while presumably necessary, is admittedly arbitrary. No one can say whether Denison's 40 per cent adjustment is too large or too small and by how much.

Thirdly, the distribution of the male population by level of education for years before 1940 is accomplished by cohort analysis based on 1940 Census reports in which it appears that older age-groups overstated their educational achievements to a degree that varies positively with age. Denison adjusts for this bias (which would have resulted in an understatement of the rise in the level of schooling) on the basis of its indicated importance in the decade 1940 to 1950. The indicated adjustment (0.81 percentage points per decade) amounted to 18 per cent of the calculated contribution of education to average earnings in the decade 1940-1950. But the importance of the adjustment in earlier decades, when the contribution of education to earnings change was smaller, would have been relatively still more important.⁹

Fourthly, the apparent importance assigned by Denison to the rise in level of education is approximately doubled by the fact that he treats the rise in school days per year on a par with the rise in number of school years completed. Denison offers no evidence to support his treatment, and I regard it as highly questionable.¹⁰

⁹ The relative importance of the same adjustment would have been 19.7 per cent for 1930-40; 24.6 per cent for 1920-30 and 30 per cent for 1910-20.

¹⁰ If I understand it, the procedure carries the absurd implication that a boy who com-

Fifthly, the Denison calculations are an incomplete accounting because they neglect changes in the quantity of on-the-job training and, more generally, of training outside formal educational institutions. Since the amount spent on such training is reported to be nearly equal to the amount spent on formal education,¹¹ changes in such expenditures would have a substantial bearing on the question.

Finally, whatever the accuracy and completeness of the Denison calculations, one should be clear that they take account of only that part of the return to education which is captured by individuals. Yet the difference between social and private product is probably very large and may be of the same order of magnitude as the private product itself. The progress of applied technology and the pace at which businessmen exploit it—including that part associated with the scale of markets—are surely significantly influenced by the number of scientists and the intensity of their schooling and by the level of skills in the population at large. The geographical mobility of the population and its adaptability to new forms of organization are also presumably substantial influences affecting the pace of progress which depend on the level of education in ways still hard to specify. Finally, the capacity of a democratic society to accomplish the transformations in its political institutions required to meet the evolving problems of a growing and rapidly changing economy also depends on the level of education of its people. Little of the return to education flowing through these channels can be captured by individuals. All of it is excluded implicitly or explicitly in Denison's calculations.

If these arguments are sound, we must conclude that Denison has probably not been successful in approximating the contribution made by the rise in the level of education to our past growth. His estimate of its private product is subject to a number of serious uncertainties and, perforce, he neglects the difference between its private and social product. According to his calculation, the contribution was very large; but it may have been much smaller or even larger, and we have no way now, so far as I can see, of saying what it really was.

Capital Input

As is well known, the measure of capital input is among the most vexed in the entire calculation. Consistent with his general procedure, Denison tries to obtain a series of capital inputs which will be proportionate to the product of the base-period earnings of capital and an index of the real capital stock. And, logically, the real capital stock is taken to be the cumulative sum of resources, valued at constant prices, devoted to saving diminished by "appropriate" sums

pletes eight years of elementary school today, when the number of school days per year is perhaps twice as large as it was on the average in 1910, has received the equivalent of a 1910 college education so far as effect on earning power is concerned.

¹¹ T. W. Schultz reports this estimate by Harold F. Clark and adds: "About all that can be said about on-the-job training is that expansion of education has not eliminated it" [9, pp. 9 and 10]. Apart from industry, the armed forces are an important locus of vocational training outside the schools.

because of depreciation or retirement. Denison defines the objective of deflation in these terms (p. 94): "The value in base period prices, of the stock of durable capital goods (before allowance for capital consumption) measures the amount it would have cost in the base period to produce the *actual* stock of capital in the given year (*not* its equivalent in ability to contribute to production)." And, with regard to capital consumption, he quotes Pigou: "When any discarding has occurred, in order to make good the depletion of capital implied in it, *that quantity of resources must be engaged which would suffice in actual current conditions of technique to reproduce the discarded element*" (Denison's italics, p. 95).

The net result of this procedure, if it could be implemented, would be to make the stock of capital move with the cumulative sum of saving in real terms, after appropriate depreciation, leaving changes in the quality or efficiency of capital goods to influence changes in output per unit of input, rather than the index of capital input itself. The actual means available for translating this conception into numbers are, of course, seriously imperfect. Raw data on capital formation (and hence the stock to which they cumulate), the figures underlying estimates of capital consumption, and the price deflators for both, all have serious limitations. The enforced neglect of the growth of government capital, for which there is no way to estimate earnings, is still another difficulty. It is surely among Denison's most valuable contributions that he threads his way so surely over this rough ground and explains the trail so clearly in this and other writings.

I confine my comments to a single point of principle. This is whether Denison (like Kendrick and his colleagues) is right in excluding the effect of quality change from his index of capital input and, therefore, in the frame of his calculations, from the estimated contribution of capital.¹² It is chiefly from this exclusion, coupled with the assumption that average earnings per unit of capital express capital's marginal contribution, that the generally rapid rise in the capital stock nevertheless accounted for only some 20 per cent of the growth in total output. Earnings of capital, taken over five-year periods, have been consistently small compared with earnings of labor. This was true even though the return to entrepreneurship is intermingled with the return to property. In Denison's calculations of total input, therefore, the rapid rise of capital stock is given only a small weight. The implicit moral is that the progress of output per unit of labor (adjusted for the contribution of education, etc.) has depended chiefly on the pace of advance in knowledge, on the skill of entrepreneurs in finding the best opportunities to use capital and labor, and on the efficiency of capital markets in channeling savings to business firms which are exploiting the best opportunities. The pace of advance would not have been

¹² There are other points which challenge discussion and, perhaps, debate, but alternative procedures would not greatly alter Denison's results and lack of space prohibits comment. These issues include Denison's use of estimates of "gross" rather than net capital stock as an index of capital input, his reliance on measures of the capital stock available rather than on that employed, and his classification of the reproducible durable stock into three groups: farm, nonfarm residential, and other nonfarm, each weighted by its own earnings.

much slower—problems of demand generation being neglected—even if the level of capital formation had been much lower. By the same token, acceleration of growth in the future, if it were to be accomplished by higher levels of investment alone, would require relatively huge increases in investment quotas.

The economic model which underlies Denison's calculations stands in sharp contrast to the model with which Robert Solow has been experimenting in his attempts to develop an aggregate production function for this country [10]. Solow asks us to imagine an economy enjoying advances in knowledge, potential economies of scale, extensions and improvements in schooling, improvements in social and economic organization and other elements of progress, all at some constant rate. But he assumes that none of these advances can be exploited except through the use of newly designed durable capital equipment. On the other hand, each unit of capital equipment carries with it a certain factor of improvement compared with equipment of older vintages, and this improvement factor is independent of the level of investment in a given year. In such an economy, given the improvement factor, the pace at which labor productivity advances would depend on the pace at which old capital is retired and replaced by capital of modern design and on the amount of capital of latest vintage added to the stock. In short, it would depend on the volume of gross capital formation. In calculating a production function which gives quantitative expression to this interpretation of U.S. growth, Solow finds, in effect, that the contribution of capital input to output growth is much greater than Denison does. An issue of first-rate importance is, therefore, posed.

In the issue thus drawn, it is well to be clear about what Solow is saying. He is not contending that capital formation is a sufficient condition for growth. The advances of knowledge, the economies of scale, the longer schooling, the improvements in organization were all necessary. Given their existence, however, Denison would have it that we could have enjoyed the greatest part of the observed increase in national product per man even if net capital formation had been zero. On Solow's calculations, however, the growth of national product is very sensitive to the accumulation of capital. If it had proceeded more slowly, the pace of advance of national product would have been greatly retarded. Capital accumulation was not a substitute for anything, or anything much, but it was the vehicle of everything.

So far as I can see, the difference between these two views depends crucially on the question whether improvement from whatever source can impinge on output per man only through the mediation of capital equipment of new design. As to this, it is common ground that the requirement that all improvement be "embodied" is not literally valid, and Solow makes no claim that his econometric work constitutes a test of the relative merits of his and a Denison-type model. By contrast with the literal requirements of Solow's model, Denison offers the judgment that the largest part of the actual changes in equipment design has as its object changes in the character of final products whose contributions to economic welfare do not register in measured national product. Contrariwise, Denison argues that as much as one-half of the productivity change which takes the form of reductions in cost actually reflects managerial and organizational improvements requiring little or no changes in equipment.

Moreover, in so far as new capital was required to carry productivity change, it was a vehicle for somewhat less than one percentage point in the growth rate in recent decades, not for the whole increase in man-hour productivity—some 2.5 per cent per annum—as in Solow. The factual gap between the two views is, therefore, profound and not really usefully attacked by speculation. Still further issues arise when we consider the implications of the Denison and Solow analyses for growth policy [see below].

Output per Unit of Input

In earlier calculations of the kind Denison makes, the difference between the number of percentage points in the rate of growth of the index of combined inputs and that in the rate of growth of national product represented an unanalyzed residual. It was larger than Denison's measure of productivity change because it included the contribution of certain unconventional inputs which Denison has isolated in the form of changes in the quality of labor associated with the rise in the level of education and with that in intensity of effort. But Denison does not leave even the smaller figure which he derives as the difference between input growth and output growth as an undifferentiated residual. He makes explicit allowance for two broad classes of factors: changes in the efficiency of resource allocation and economies of scale.

Denison treats changes in the efficiency of resource allocation under a dozen different heads. Each taken separately appears to have had only a small influence on the growth rate in past decades. According to Denison's estimates, their effect would have been minor even if they had all operated in the same direction. It appears, however, that they did not, and in Denison's tables, their net effect during the last three decades emerges as zero. I see no reason to doubt that Denison's estimates are of the right order of magnitude. For good or evil, changes in the efficiency of resource allocation have not been an important growth factor in this country. It is worth remembering, however, that the kinds of factors Denison takes up as having a bearing on resource allocation have other consequences for growth which may be far more important, but which inevitably escape our statistical net. Thus, in considering the tax structure, we cannot account for its impact on the level and composition of investment. In considering the restrictions on competition, we have to neglect their influence on the inducement to engage in research and to hunt out and exploit new methods of production and improved final products. In considering international trade restrictions, we have to pass over their significance for competition and for the flow of information about production processes and methods of industrial organization. Denison does, indeed, make perceptive comments about all these influences, but, quite understandably, he finds no way to measure them, and he leaves them all to be reflected in his ultimate residual.

By contrast with resource allocation, the economies of scale appear, in Denison's tables, as a principal source of growth, accounting for some 37 per cent of productivity growth during 1929-57 and for fully 50 per cent during 1909-29. Unfortunately, the estimate for this undoubtedly important factor hardly bears discussion. The considerable figure Denison assigns to it is merely the

numerical expression of an assumption that the economies of scale due to the growth of the national market yielded an advance in output equal to one-tenth that yielded by all other growth factors (that is, one-eleventh of the increase in measured national product) and that economies due to the independent growth of local markets were one-tenth as large. But this assumption is based on no empirical evidence whatever and, as Denison makes amply clear, constitutes no more than his own sober judgment. A good man's sober judgment is not to be spurned. I know of no theoretical or empirical considerations which render it doubtful, but, like Denison, I know of none which makes it seem particularly trustworthy. I take it that the explicit recognition of this factor in Denison's table chiefly serves to remind us that there is such a factor which needs to be taken into account when one considers the contribution to growth made by changes in other forces.

It is only after providing for the two classes of influences just mentioned that Denison comes to his ultimate Residual. He calls it the "Advance of Knowledge," but, of course, this category, which nominally accounts for just 20 per cent of total growth during 1929-57, is not in any meaningful sense a measure of that alone, and it may not be a measure chiefly of that. For, as a residual, it is the grand legatee of all the errors of estimate embodied in the measures of national product, of inputs conventional and otherwise, and of the economies of scale and other factors classified under productivity growth. Beyond this, however, several points of principle deserve notice and discussion.

First, as Denison clearly explains, the figure set down for the Advance of Knowledge is not the full contribution of that factor—whatever it may really be—to the growth of national product considered as a measure of economic welfare. For national product, as measured, neglects much or most of the change, conventionally taken to be improvement, in the quality of final products. Since such change does not affect the measure of inputs, any adjustment for quality change in the measure of national product growth would add the same amount to the measure of the Advance of Knowledge. Indeed, it is Denison's view that a very large part of that advance, particularly in the form of technical progress, is in fact devoted to the discovery and production of new final products not reflected in the national product estimates.

Second, the Denison residual still reflects the contribution of certain inputs, chiefly expenditures to support research and development activities and expenditures for education in so far as these help provide the scientific and technical personnel for research and the skilled labor whose presence encourages firms to exploit the advance of technology.

Finally, however, we have to recognize that, even apart from errors, the residual cannot be regarded as the contribution of the advance in knowledge in any meaningful sense. It is, in fact, nothing more and nothing less than the measure of the advance in productivity from every source other than those specifically identified elsewhere in Denison's calculations. The issue can, perhaps, be brought to a focus by considering the distinction made by Denison between what he calls the advance in knowledge and what he calls the "lag in the application of knowledge." The latter he considers can be measured by,

though it is not identical with, the change in the average age of capital goods, a consideration which turns out to have been a negligible growth factor in recent decades. This identification for purposes of measurement, however, suggests that there is some stable relation between the techniques embodied in the capital stock added in a given year by firms who invest that year and the best techniques which are, in some sense, "available" in that year. What sense should that word "available" be given?

(a) Is it to mean the best techniques which the basic principles of the physical universe as apprehended at a given time, together with the existing empirical information, make possible, regardless of the expense and work involved in translating the basic principles into appropriate applied forms and communicating that knowledge to all concerned, and regardless too of the institutional obstacles involved in obtaining finance and labor or of the will and incentive to overcome these obstacles?

(b) Or is it to mean, say, the techniques adopted by the most advanced firms in each year (in the United States alone? anywhere?)? This criterion would take into account the existing problems of information, entrepreneurship, finance, labor supply, legal and market restrictions as faced by the most advanced firms in a given year.

(c) Or is it to mean, as I think it does mean for Denison (and, in the present state of our estimates inevitably must mean) the techniques available to representative firms which actually do invest in a given year, having regard to the representative state of entrepreneurial capacities, drives and outlets and to representative conditions governing information, labor supplies, finance, and so forth.

It goes without saying that the last criterion is tautological since it identifies the Advance in Knowledge with the improvements actually made. Denison's ultimate residual is, therefore, inappropriately titled. Errors aside, the size of that residual must be taken to reflect the effective rate at which actual progress in techniques of production takes place in representative firms. Certainly its connection with the advance of knowledge conceived of as some disembodied stock of principles and factual information is indirect and uncertain.

No one who reads Denison on the sources of U.S. growth can fail to benefit. His discussion of the conceptual and statistical problems involved in estimating the contributions of various sources can only be described as a tour de force. So far as that goes, his book is an epitome of years of work and writing by himself and by many other students of national income and productivity measurement. In Denison's hands, the subject emerges again pithy, fresh and forceful. Nevertheless, it seems to me that the fruits of all this work have not yet ripened. The problem posed by Schmookler and by Kendrick and his National Bureau colleagues—namely, that to explain a very large part of the growth of total output and the great bulk of output per capita, we must explain the increase in output per unit of conventionally measured inputs—still remains. We can draw up a catalogue of the kinds of elements of which such an explanation must be composed: unconventional inputs, like labor intensity and education; economies of scale; and advances in knowledge of techniques and

organization. Denison's attempt to attach numbers to these elements, however, still falls short of success. And this unfortunate fact is just the inevitable consequence of the present state of the art. The underlying data are weak, the various growth factors interact in a complex way (and expand along distressingly parallel lines), and experiments with the statistical derivation of production functions have really just begun.

II. *The Alternatives Before Us*

In this review, I have followed the lead of Denison's title (which prints SOURCES in caps and Alternatives in caps and lower case) by devoting most of my space to Sources. It is probably true, however, that Denison's interest in the analysis of history is largely subsidiary to his interest in the formulation of policy. Nevertheless, I must now deal with the policy side of his work in summary fashion. I can, perhaps, do this the more easily because I can agree with so much of what Denison has to say.

If I read him right, Denison's general conclusion is that, for the United States, acceleration in growth cannot be sought only along a few very broad lines of policy. If we are to raise our measured growth rate significantly above the level it would achieve without deliberate social intervention, we must take action along a great many lines, each of which taken by itself can make only a minor contribution. In Denison's view, the country would be hard put to devise and implement a set of policies likely to raise our rate of growth per annum during the period 1960-80 by a full percentage point above what it would otherwise be. Yet, if we were determined, such a set could be found from among the many alternative policies open. And a one percentage point increase would be no mean achievement since it would imply a rate of aggregate growth about one-third higher than Denison's projected autonomous rate and a 50 per cent rise in the rate of growth of per capita income relative to the same standard. Subject to some comments at the end of the paper. I agree with this general position, and I think its strength can best be brought out by reviewing Denison's appraisal of four lines of policy that have attracted attention.

One is to increase *the rate of growth of the labor force*. Since past births have already determined the native-born population from which the labor force can be drawn, only three possibilities remain: to increase participation rates, to slow down the decline in hours of work, and to increase the flow of immigrants. Maintaining conditions of full employment is often held out as likely to have a favorable influence upon participation rates and hours. However, Denison surely is right in saying that the difference between the average level of unemployment maintained since the war and that at which a successful full employment policy might aim would have a small and uncertain effect on participation rates.¹³ The opportunity to influence working hours seems

¹³ Denison (pp. 661-66) argues persuasively that J. W. Knowles' view [5] that, if unemployment rates are maintained at 3 per cent rather than 5 per cent, the labor force might grow at 1.9 rather than 1.5 per cent per annum, greatly exaggerates the possibilities. If Knowles were right, the 1975 labor force would be 5.9 million persons, or 6.5 per cent larger if the unemployment rate stayed at 3 per cent in the interim than if it stayed at 5 per cent. But this would imply an enormous difference in the participation of women and elderly persons, since there is little room for variation in the participation of males in their prime working years.

brighter, and Denison considers that a successful full employment policy would help to reduce the anticipated decline in hours. We might make limited gains in this way. If we could reduce the anticipated decline by 25 per cent, or one hour per hour-week, this would increase our growth rate by 0.1 percentage point per annum. What we can do by way of immigration is, of course, entirely a matter for national choice. Yet, even doubling the rate of immigration would add only 0.1 point to the growth rate, allowing something for the generally lower quality of immigrant workers.

Education to improve the quality of representative members of the labor force is a second possible source to which many look for more rapid growth during coming decades. It seems clear, from Denison's calculations, however, that little can be expected from this source in so far as its contribution depends on the quantity of education. A crude calculation tells one reason why. From 1930 to 1960, when—by Denison's figures—increased levels of education were increasing output per man almost one per cent per annum, the average number of school days attended by workers in the labor force was rising about 20 per cent per decade. The projected increase in school days attended during the next 20 years is somewhat smaller, but still large, roughly 16 per cent per decade. The drop is due to a combination of an expected smaller increase in the number of years attended by representative youngsters now in, or expected to enter, school, and a still smaller increase in the length of the school year, counterbalanced by the entrance into the labor force during the next decades of many younger workers who benefited by the great extension of education during the last few decades. The result would be a rate of increase in output per man almost, but not quite, as great as in previous decades. However, as the effect of past educational reforms makes itself fully felt with the graduation of young people into the labor force, it will be increasingly difficult to maintain the contribution of longer schooling to labor output. The school year is already quite long. In the aggregate, the possibilities of extending the contribution of education at the high school level is running out because the percentage of young people completing high school is already very high. Thus the pace of advance would have to be sustained largely by a great expansion of college and university education alone. In the long run, it seems inevitable that the contribution of education to growth must fall.

Apart from the physical difficulties of continuing to raise the amount of schooling at even its old pace, the effect of additional schooling on labor output is a very long-run effect. What we do now to increase years of schooling will be of little consequence until, after some decades, a large proportion of the labor force with less schooling has been replaced by men and women with more. One need not accept Denison's estimates of the returns to schooling in order to see the force of these considerations which seem to me to be among the most cogently argued portions of his book.

All this is not to say that longer education would not benefit certain underprivileged groups greatly, or that expenditures to make more education more widely available are not of the greatest importance simply to sustain present growth rates during the next decades and to provide for somewhat more rapid advance in the still longer run. It does mean, however, that if education is to

make striking advances to accelerated growth of output, it probably will have to be through improvements in the quality of education, through better selection of the most able students for higher education, and through concentration on those courses of study the importance of which, for increased output is particularly high.

An increase in the proportion of gross national product devoted to *capital formation* is regarded by many as the key to more rapid growth. Two questions arise: how to raise the level of investment; and how much benefit we might obtain from a given increment of investment.

Denison's discussion of the first question is knowledgeable and sophisticated, but not particularly novel. The way in which the brew of monetary policy, fiscal policy, redistribution of tax burdens, the treatment of depreciation, etc., might be mixed has engaged the attention of many cooks. Economists will find Denison's recipes carefully considered but familiar. They are unlikely to make anyone sanguine about the possibility of obtaining dramatic results. And dramatic results are what would be needed, for—as we already know—additional capital accumulation, according to Denison, is likely to contribute much less to growth than many suppose.

On this point, Denison's views are challenging. They flow simply and directly from the proposition—a deduction from marginal productivity theory—that, say, a one per cent increase in capital input will raise national product by only that fraction of one per cent which is given by the share of income going to capital. Since the share going to capital is small, while the capital stock is several times as large as national product, it is obvious that the order of magnitude of the additional net investment required to increase national product by, say, one per cent is very large indeed. On Denison's calculations, additional net investment would have to be in the neighborhood of 13 or 14 per cent of national income if the composition of the new investment were similar to that of the existing stock.¹⁴ This would involve raising the ratio of net investment to national income to 3.3 times its present level.¹⁵ Simply to raise the growth rate by 0.1 per cent during the next 20 years would mean raising the net investment ratio by about 25 per cent. These figures reflect Denison's allowance for returns through economies of scale, but they make no allowance for diminishing returns. For massive injections of additional capital per worker, the allowance required on this latter account might well be substantial, as Denison points out, and even his large figures for the additional investment needed to raise growth rates would then be too small.

It is an implication of Denison's analysis that we might do much to stimulate growth without raising our investment quotas. We might even permit them to sink, but in order to stimulate growth significantly through capital accumulation we should have to increase our investment quotas enormously. The moral of Solow's view is just the opposite. Pressed to the limit, nothing we might do to stimulate growth would be effective without a good deal of investment. But

¹⁴ The figure would be in the neighborhood of 10 per cent if none of the additional investment were devoted to housing for which the return is low.

¹⁵ If none of the increment went to housing the required multiple might be lower—2.7, according to Denison.

if we could merely maintain the rate of *potential* improvement opened up by the advance of knowledge, the economies of scale, the extension of education, and whatever else contributes to the potential efficiency of resources, a fairly modest increase in rates of capital formation would provide large increases in our rate of growth. Additional investment would embody additional quotas of each year's potential productivity gains from all sources *pari passu*. But is Solow right?

We have already seen how the range of validity of his model depends on the degree to which potential productivity gains, whatever their source, require embodiment in capital of new design. As we look to the possible gains from enlarged investment quotas, additional questions arise, and Solow himself has identified them: "... a sharply higher rate of investment may bring about premature scrapping of old equipment. . . . [T]here may be limits even in a mature economy to the speed with which the system can adjust to large inflows of capital" (10, p. 86).

It is evident that even in what Solow calls "the prosaic case of tangible capital formation," we are still a long way from having quantitative estimates of the social return to resource input.

Finally, I note briefly, Denison's treatment of the potentialities of expenditures for *research and development*. The great hopes that are sometimes placed in the efficacy of enlarged expenditures for this purpose are swiftly cut to more modest dimensions by Denison's scalpel. How much, he asks, of the .58 percentage points in the measured growth rate which he assigns to Advance of Knowledge can be attributed to organized R and D? The knowledge relevant to measured growth is that which lowers costs, not that which yields new final consumer goods. In large part such knowledge consists of managerial and organizational procedure rather than technology proper, and some part of technology is an engineering by-product of ordinary production activity. Suppose one-half the relevant advance is technological, that one-half of this stemmed from activity in the United States, and that two-thirds of this came from organized R and D. Then one-sixth of the .58 percentage points is assignable to R and D in this country. The factor Denison applies is one-fifth, so his answer is .12 percentage points. Denison calculates that the expenditure which is to be associated with this result may be gauged from the \$5 billion for privately financed research in 1960 of which some portion was devoted to style changes and other adaptations of only transient influence. Since Denison estimates that it would have required about \$3.8 billion of net investment devoted to nonresidential capital to raise national product by the same .12 percentage points, he concludes that the social return on the two classes of expenditure was about the same and that neither was high.

Such calculations are, of course, no more than guesswork,¹⁶ yet useful in es-

¹⁶ One possible flaw in the argument, however, may be worth notice. If there is any substantial lag between R and D expenditure and its results, the contribution of .12 percentage points to the growth rate should not be associated with expenditures of the same date. Five years earlier, such expenditures in current prices were one-half as large and ten years earlier perhaps one-fifth as large. The difference in constant prices would have been smaller.

tablishing orders of magnitude. An important reason for this apparently modest return is that the bulk of R and D—perhaps $\frac{1}{2}$ of private and virtually all government expenditures—is devoted to product improvement, which does not register in measured national product, but which we want. We, therefore, have every reason to encourage R and D, but little reason to expect dramatic results in terms of measured growth. This is all the more true if Denison is right in thinking that resources devoted to research operate subject to rapidly diminishing returns to scale. He finds no evidence that the pace of Advance of Knowledge has been growing even as fast as our population, much less as fast as the scientific personnel and capital specially involved.¹⁷ On the other hand, there is no reason to accept the present outlay of funds devoted to applied research as even approximately as good as it might be. In an activity where the difference between private and social return is so great and where the returns private firms can capture are so heavily dependent on the size of firms, the character of markets, and the nature of the product, there is little reason to trust ordinary market incentives to guide the allocation of funds. Actual expenditures are, in fact, highly concentrated in relatively few industrial sectors, and in some are virtually neglected. There may well be opportunities to increase the productivity of resources devoted to research by a wider distribution of expenditures, as Denison cogently argues.

The general moral of Denison's book is that those who seek more rapid growth for the United States must pursue it along many lines. There are no three or four broad measures which, if taken, promise dramatic success. Denison himself offers a shopping list of 31 possible lines of action from most of which we should be hard put to extract an extra 0.1 percentage point for the growth rate. Some might be pressed for more, some do not offer even that much, some would affect only "true" rather than measured growth, some might be judged undesirable for one reason or another.

I suspect that this hard moral of Denison's book is sound. Yet it is also clear that the knowledge on which such a judgment is based is extremely weak. Denison has made a wholly admirable effort to reduce the problem to quantitative terms, and the authority with which he handles the data, the skill and judgment with which he uses them, are evident from first to last. Yet, on close inspection, I think the figures fall apart at almost every important point. In spite of the author's careful and candid exposition, there is a certain air of reliability and precision about his estimates which the state of our knowledge today simply does not support.

We are, indeed, just at the beginning of serious work on the subject of economic growth in the United States. Denison's important contribution is to have pulled the many parts of the problem together and built a structure with such shape and solidity as the materials now permit. Doubtless as the work advances, more complex and subtle models of our economy will be designed, and

¹⁷ This is a judgment manifestly subject to the ambiguities surrounding Denison's identification of his Residual with Advance of Knowledge.

statistical estimation will have to rest on more advanced econometrics than Denison employs. The pace at which useful work can proceed will depend in good part on the appearance of more reliable and detailed information. There is, in fact, almost everything yet to be done, but those who want to contribute to the subject can hardly do better than to take their start with Denison.

REFERENCES

1. MOSES ABRAMOVITZ, *Resource and Output Trends in the United States Since 1870*. National Bureau of Economic Research Occasional Paper 52. New York 1956.
2. SOLOMON FABRICANT, *Basic Facts on Productivity Change*. National Bureau of Economic Research Occasional Paper 63. New York 1959.
3. H. S. HOUTHAKKER, "Education and Income," *Rev. Econ. Stat.*, Feb. 1959, 41, 24-28.
4. J. W. KENDRICK, *Productivity Trends in the United States*. Study by the National Bureau of Economic Research, Princeton 1961.
5. J. W. KNOWLES, "Potential Economic Growth in the United States," Study Paper No. 20, prepared for the Joint Economic Committee in connection with the study *Employment, Growth and Price Levels*, 86th Cong., 2nd Sess. Washington 1960.
6. H. P. MILLER, "Annual and Lifetime Income in Relation to Education," *Am. Econ. Rev.*, Dec. 1960, 50, 962-86.
7. F. C. MILLS, *Productivity and Economic Progress*. National Bureau of Economic Research Occasional Paper 38. New York 1952.
8. JACOB SCHMOOKLER, "The Changing Efficiency of the American Economy, 1869-1938," *Rev. Econ. Stat.*, Aug. 1952, 34, 214-31.
9. T. W. SCHULTZ, "Capital Formation by Education," *Jour. Pol. Econ.*, Dec. 1960, 68, 571-83.
10. R. M. SOLOW, "Technical Progress, Capital Formation and Economic Growth," *Am. Econ. Rev.*, Proc., May 1962, 52, 76-86.

COMMUNICATIONS

The Analysis of Demand

The first part of this paper attempts to construct a more complete, more systematic and more symmetrical formulation of the Hicksian analysis of demand. The second part endeavors to integrate substitution effects, income effects and complementarities in a more general alternative approach to the analysis of demand.

I. *A Suggested Reformulation*

John R. Hicks' valuable separation of demand into income effects and substitution effects [2, Ch. 2] and his analysis of the substitution effect into complementarity and substitution [2, Ch. 3] are difficult for students to handle, partly because of a certain unnecessary asymmetry and partly because of the use of the word "substitution" for two different purposes.

The asymmetry occurs in the dichotomy of goods into the rather special class of "inferior goods," of which one buys less when real income is increased (relative prices remaining the same), and the much more general class of all other goods. A symmetrical dichotomy might be to divide goods into those which increase less than in proportion to the increase in income and those which increase more than in proportion. Hicks' segregation of inferior goods is more useful than this symmetrical dichotomy, but the benefits of segregating inferior goods could be retained in a more complete and yet symmetrical analysis that marked off a "normal" area from "inferior goods" at one extreme and "superior goods" at the other extreme. A parallel asymmetry appears in Hicks' dichotomy of the substitution effect into complementary goods and all other goods which he calls substitute goods. Here, too, a trichotomy could separate out an opposite extreme, symmetrical with complementarity, leaving a middle range between the two extremes.

The other difficulty that sometimes confuses students is Hicks' use of the same root both in the term "substitution effect" to refer to the change in the amount of a good bought in response to a change in its relative price (as contrasted with the "income effect" or the response to a change in real income) and in the term "substitute good" to refer to a particular kind of substitution effect; namely, the effect of a reduction in the amount of one good bought when more of another good is bought (as contrasted with a "complementary good" where there is an increase instead).

To avoid these difficulties I suggest the following set of nine definitions:

1. *Income effect*: The change in the quantity of good¹ bought as a result of change in real income, relative prices remaining the same.

¹ Throughout this article, "good" stands also for any *group* of goods whose relative prices are unchanged.

2. *Inferior good*: A good of which less is bought (and therefore has less income spent on it) when income increases. (Income elasticity of demand is negative.)

3. *Superior good*: A good of which so much more is bought when income increases that more than the whole increase in income is absorbed (and less is therefore left available to be spent on everything else). (Income elasticity of demand is greater than the ratio of total income to the amount spent on the item.)

If any good is inferior, then the remaining good (or all the remaining goods taken together) must be superior because more than the whole increase in income is left to spend on it; and conversely, if any good is superior, the remaining good (or all the remaining goods taken together) must be inferior because there is less income left for it (or them).

4. *Normal good*: A good of which more is bought when income increases, but not so much more as to leave less income for everything else. (Income elasticity of demand is positive, but less than the ratio of total income to the amount spent on the item.)

It is possible for all goods to be normal, but they cannot all be inferior and they cannot all be superior. These relationships are illustrated in Figure 1 where the arrows represent possible directions of movement in the quantities of X and Y bought as income is increased from the initial point P .

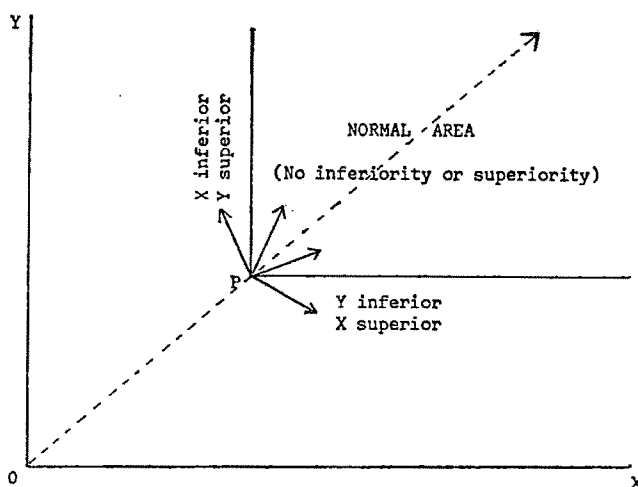


FIGURE 1

The NE quadrant (with respect to P) shows the case when X and Y are both normal so that more of both is bought when income increases. The NW quadrant shows X inferior and Y superior. The SE quadrant shows Y inferior and X superior. The dotted arrow passing through P from the origin is the symmetrical dichotomy suggested above, but rejected in favor of the trichotomy into inferior, normal and superior. In terms of the dichotomy, an arrow through

P steeper than OP would show Y superior and X inferior and a flatter arrow would show X superior and Y inferior, leaving no area at all for "normality."

Hicks' formulation distinguishes only between the NW quadrant where X is inferior and all the other possible directions for the arrows where X is not inferior. It can also be applied in reverse to distinguish only between the SE quadrant where Y is inferior and all the other possible directions of the arrows where Y is not inferior.²

If a group of goods taken together is inferior (i.e., less is spent on them when income is increased), not all of the goods in the group have to be inferior individually. Some of the individual goods and some subgroups may increase in quantity (and therefore have more spent on them) when income increases—i.e., they may be normal or even superior. But at least one of them must be inferior. If less is spent on all of them together, but more than before is spent on some of them, it must be even more true of the remaining ones that less than before is spent on them.

If a group of goods is superior, it is similarly true that not all of them have to be superior individually. But in this case it is possible that no member of the group and no subgroup will be superior. All the members of a superior group and all the subgroups may be "normal" in that although more of each is bought (and more spent on it than before) no single one has more than the whole increase in income directed to the increased expenditure on itself, and some may even be inferior.

To avoid one of the uses of the word "substitution" while refining the analysis of Hicks' "substitution effect," we shall speak instead of direct and indirect price effects.

5. *Direct price effect*: The effect of a change in the price of a commodity on the quantity of that commodity bought (the real income level being kept constant by an adjustment of money income).

The direct price effect is always negative, i.e., the quantity change (if any) is in the opposite direction to the price change. The cheapening of a commodity can never by itself result in less of it being bought.³

6. *Indirect price effect*: The effect of a change in the price of a commodity

² Students (and teachers) are frequently tempted to say "superior" for noninferior and to suppose that in this they are following Hicks. Hicks does speak of "the inferior good and the superior substitute which replaces it" [1, p. 66], but only to refer to a particular substitute, and does not call "noninferior" goods in general "superior goods."

³ Prestige goods are only apparent exceptions. If the only thing that is reduced is the price that actually has to be paid, more, never less, will be bought. A change in the price that other people *think* you pay can work the other way, but that is not a genuine price effect.

Similarly with the case of expectations. If price reductions establish an expectation of further reductions, purchases may drop, but it is not the reduction or what one actually has to pay that is responsible for this. It is the *expectation* of future price reduction that is responsible. Such an expectation would be only *more* restrictive if it were not for the reduction in what actually has to be paid. In the case of an inferior good, too, the reduction in what has to be paid for additional units can only be responsible for *increasing* the amount bought even if the income effect (of the money saved by the price reduction) should more than offset this in a "Giffen" case.

on the quantity bought of *another* commodity (the real income level being kept constant by an adjustment of money income).

In the case of two commodities only, the indirect price effect can only be positive, i.e., the quantity of the other commodity must move in the same direction as the price of the first commodity. If X becomes relatively cheaper and more of X is bought, this must be accompanied by a decrease in the amount of Y if the real level of income is not to go up; and conversely, a rise in the relative price of X which reduces the amount of X bought must be accompanied by an increase in the quantity of Y .

In the case of more than two commodities, three cases are possible: complementarity, its opposite, and competitiveness.

7. *Complementarity*: If more of Y is bought when more of X is bought (because X has become cheaper), then Y is complementary with X .

If Y is complementary with X , X must also be complementary with Y . More of Y is bought only if the increase in X makes Y more effective. This means that the effectiveness of X and Y together is greater than the sum of the effectiveness of each of them separately, and that means that an increase in Y makes X more effective and X is complementary with Y .

For example, suppose that initially X and Y each cost \$1 a unit and are used in such quantities that their marginal worth is just equal to their price. The price of X is then reduced to 90 cents per unit and the quantity of X is expanded until an additional unit is worth no more than 90 cents while the quantity of Y is held constant. If Y is complementary with X (so that there would be tendency for more of Y to be bought), this means that an additional unit of Y has become worth more than its price. Let us say it has become worth \$1.05. A unit of X and a unit of Y *together* are then worth at least \$1.95. (They would be worth more than this to the extent that adding another unit of X would increase the worth of Y still more.) This means that the use of an additional unit of Y (which costs \$1) raises the marginal worth of X from 90 cents to at least 95 cents and that means that X is complementary with Y .

Whenever Y is complementary with X , Z must be related to X in an opposite manner. If increase in X (due to a reduction in the price of X) is accompanied by an increase in Y , there will have to be a reduction in Z sufficiently great to keep the individual on the same level of real income even though both X and Y have increased. It may seem that the natural name for this relationship would be *substitution*, which suggests a natural counterpart to complementarity. This, however, will not do for two reasons:

(a) The counterpart to complementarity, like complementarity itself, is applicable only to the case where there are three or more variables. Yet, it is almost impossible to avoid using the word substitution when referring to the replacement of one input by another or of one output for another in response to a price change where these are the only two variables and complementarity and its counterpart cannot arise.

(b) The term substitution suggests that what is involved in the counterpart to complementarity is a very high degree of substitutability—i.e., that if Y is complementary with X , this is because so much of Z is displaced by the relatively cheapened substitute X that more of Y has to be brought in to main-

tain the level of real income. But the phenomenon we are concerned with cannot be explained by a high substitutability of X for Z . Even if we take the very highest conceivable degree of substitutability, namely the case where X and Z are completely identical items and therefore absolutely perfect substitutes, a cheapening of X results in Z being completely displaced by X . There would then be more of X than there previously was of X and Z together,⁴ because some additional X would displace some of Y (some X will be substituted for some Y). There would therefore have to be *less* Y than before so that Y could not be complementary with X . The relation between Z and X that is a reflection of complementarity between Y and X is not substitutability, but something basically different.

We must therefore avoid the word "substitution" and instead speak of "anticomplementarity."

8. *Anticomplementarity*: If, when X is cheapened and more of it is bought, so much less of Y is brought that there is more money left for Z (even though less money than before must be available for Y and Z together) then Y is anticomplementary with X .

There must be less money left for Y and Z together because if this were not so when we have more X , the real income level would be greater, and we are still assuming that money income is being adjusted so as to maintain the same level of real income.

If Y is anticomplementary with X , Z must be complementary with X since more of Z is bought when more of X is bought. (There is more money left to buy Z at an unchanged price.) The converse is also true. If Y is complementary with X , Z must be anticomplementary with X —i.e., so much less of Z is bought that more money is left for Y (otherwise more of Y could not be bought and Y could not be complementary with X).

9. *Competitiveness*: If less of Y is bought when more of cheapened X is bought, but not so much less as to leave more money for Z , then Y is neither complementary nor anticomplementary with X , but a competing good.

It is possible for all goods (other than X) to be competing with X , but it is not possible for all to be complementary with X or for all to be anticomplementary with X because, as we have seen, if Y belongs to either of these last two categories, Z must belong to the other, and vice versa.

A group of goods that is complementary with X may contain goods and subgroups of goods that are not individually complementary, but competing or even anticomplementary with X . In that case, the remaining goods as a subgroup must be even more complementary with X . Since more than before is spent on the complementary group as a whole and less than before is spent on the competing and anticomplementary goods within the group, there must be a still greater increase in the amount spent on the remaining members of the group. At least one of its members must therefore be individually complementary with X .

A group of goods that is anticomplementary with X may similarly contain members of a subgroup of members that are not anticomplementary, but

⁴There is no difficulty in making this comparison because if X and Z are perfect substitutes, an appropriately chosen unit of X is exactly equivalent to a unit of Z .

competing or even complementary with X . But, in this case, it is possible for *none* of its members or subgroups to be anticomplementary with X individually. If some are complementary (so that more is spent on them than before), the remaining members, as a group, will be even more anticomplementary with X . But all the members of any anticomplementary group may be competitive, in that although less is spent on each member than before, no single member or subgroup (which we may call Y') has so much less spent on it that more money is left for Z' (the group of all goods other than X and Y'), and some may even be complementary.

Hicks' "income effect," "inferior good," and "complementarity" have the same meanings as here. Hicks' "normal good" may be either a superior good or a normal good, his "substitution effect" may be either a direct price effect or an indirect price effect, and his "substitute good" may be either an anticomplementary good or a competing good.

II. *Substitution Effect: An Alternative Approach*

The following device is an attempt at an alternative approach to Hicks' "substitution effect." It tries to combine the symmetrical dichotomy mentioned in the beginning of Section I with the trichotomies developed thereafter and it grows directly out of Hicks' extension of the analysis of consumption to the analysis of production. It yields a more general formulation that assimilates income effects to the price effects.

Definition 1—An *element* is an input or an output, outputs counting as positive elements and inputs as negative elements.

Definition 2—A *variable element* is an element that varies in quantity in response to price changes.

Theorem 1—In any economic situation, the changes in the variable elements in response to a change in the relative price of a variable element will never all be in the same direction. If one element increases, at least one other element will decrease, and vice versa.

This is because in any economic situation an increase in an output must be accompanied either by a decrease in some other output or by an increase in some input (which is a decrease in an element, inputs being counted negative). Similarly, a decrease in an input (which is an increase in an element) must be accompanied either by an increase in some other input or by a decrease in some output. If this is not so, the original situation must have been an uneconomic one in which it was possible to get something for nothing. Conversely, a decrease in all the elements that varied would indicate a deliberately wasteful decrease in output or increase in input, implying a departure from an economic situation if such a situation existed in the first place. This theorem seems to correspond to the elimination of income effects by fixing the "nonvariable" elements that constitute the framework within which we are working, leaving room only for relative price effects on the variable elements. (We shall see below that this is not quite so.)

Definition 3—The *direct price effect* is the effect of a change in the relative price of an element on the ratio between the quantity of that element and

the quantity of all the other variable elements taken together. (This corresponds to definition 5 of Section I.)

Theorem 2—If the prices of the variable elements all change in the same proportion, so that there is no *relative* change in their prices, there will be no effect on the quantities of any of them.

Since there is no change in the relative price of any pair of variable elements, there is no reason for substituting one for another or for changing the rate of transformation of one into another. A proportional change in the prices of all the variable elements does mean a proportional change in the opposite direction of the relative prices of all the fixed elements relative to the prices of the variable elements, but the quantities of the fixed elements, by definition, cannot be changed.

Theorem 3—Any direct price effect is always positive. The quantity of the element changes in the same direction as the relative price absolutely, as well as in relation to the other variable elements.

This means that a cheapening of an input relatively to the prices of the other elements, if it has any effect at all, will always result in an increase in that input (which is a decrease in the element), and that an increase in the price of an output if it has any effect at all will result in an increase in its output. (The changes might be very small or, in the limiting case zero, but never in the opposite direction.)

Theorem 4—Any response to a change in the price of one variable element in the quantity of the other variable element (or in the quantity of all the other variable elements taken together if there is more than one) is always negative; the quantity—absolutely as well as relatively to the first variable element—changes in the direction opposite to the change in the relative price of the first variable element.

This is because the change in the relative price of the first variable element constitutes an opposite change in the relative price of the second variable element (or the group of all the other variable elements) and the positive direct price effect of the latter constitutes a negative response to the first price change.

Where there are only two variable elements, these relationships can be expressed as follows:

(a) Where both of the variable elements are inputs, e.g., factors of production, one will be substituted for another if its relative price falls. Our device here merely changes the sign—the increase in the relatively cheapened factor is a decrease in one element, and the decrease in the other factor is an increase in the other element.

(b) Where both of the variable elements are outputs, and the price of one output rises relatively to the price of the other, the first will be substituted in production for the second.

(c) Where one of the two variable elements is an input and the other is an output, we find ourselves dealing not with substitution, but with increases or decreases in *production* (the transformation of one element into another). An increase in the price of the product (or output) relatively to the price of

the factor (or input) will result in an increase in the output of the product (an increase in one element) accompanied by an increase in the input of the factor (a decrease in the other element); and conversely for an increase in the relative price of the factor.

Where there are more than two variable elements, we may treat the situation in the same way by considering all the other variable elements (other, that is, than the first, whose relative price has changed) as a single second variable element.

This gives no trouble where all the other variable elements are outputs (which have the same sign as elements) or where all the other variable elements are inputs (which have the opposite sign). The matter is a little more troublesome where some of them are outputs and some are inputs. In that case, an increase in the quantity of the "second element" will consist of the increase in the value of the outputs minus the increase in the value of the inputs (or plus the decrease in the value of the inputs), all of course weighted by their unchanged prices.

If the change in the quantity of the first element is accompanied by opposite changes of exactly the same proportion for every one of the other elements, so that the ratio between these is unaffected, it is obvious that they can be treated as a single item and that is the end of the story. Only the direct price effect is operative. But a change in the price of one element, and the consequent change in the ratio of this element to the others taken together, may have an *indirect* effect on the proportions between the other elements. Thus, if the variable elements are all inputs, a decrease in the price of input *A*, while bringing about the substitution of *A* for other inputs, may also result in a second input *B* being substituted for the remaining inputs (which we may now consider together as a third input *C*). The same indirect effects are of course also possible if the elements are outputs or if some are inputs and some are outputs.

Definition 4—The *indirect price effect* is the effect of a change in the relative price of one variable element on the proportion between a second variable element and the remaining variable element of elements. (This corresponds to but is different from definition 6 of Section 1.)

The direct price effect can be measured by the (direct) elasticity of substitution (or by the elasticity of transformation) which is the proportional change in relative price divided into the proportional change in the relative quantities of the two elements, or groups of elements) involved.

The indirect price effect can be measured by the *cross*-(or indirect) elasticity of substitution (or transformation) which is the proportional change in the relative price of the first element divided into the proportional change in the ratio between the second and third elements.

If *A*, *B*, and *C* are the variable elements, the direct elasticity of substitution or transformation (the measure of the direct price effect of a reduction in the relative price of *A*) is equal to the proportional change in the relative price of *A* (relatively, that is, to the prices of *B* and *C*) divided into the proportional change in $A/(B + C)$, when $(B + C)$ is the value of the combination of *B* and *C* measured at their old prices. The cross-elasticity of substitution or trans-

formation (the measure of the indirect price effect) is equal to the proportional change in the relative price of A divided, not into the proportional change in $A/(B + C)$, but into the proportional change in B/C . If this measure is positive for B , it is negative for C and vice versa, with a dividing line where both are zero and there is no indirect price effect.

The indirect price effect becomes particularly interesting when it is so great that it is able to reverse the direct price effect on the quantity of one of the "other" elements (i.e., other than the one whose relative price has changed). This will be the case only if the increase in, say, B on account of the indirect price effect (i.e., its being substituted for C) is greater than the decrease in B on account of the direct price effect (i.e., greater than the decrease in B that would have taken place if there had been no indirect price effect and the decrease in $(B + C)$ had consisted of exactly proportional reductions in B and in C).

Definition 5—Two elements are *complementary* with each other if a change in one (resulting from a change in its relative price) is accompanied by a change in the other in the same direction. (This corresponds to definition 7 of Section I.)

As we have seen, this could happen only if the indirect price effect exceeds the direct price effect.

Definition 6—Whenever two elements are complementary with each other, the third variable element (or all the others taken together, if there are more than one) is *anticomplementary* with them. (The cross-elasticity is just as great for the third element as for the second, only in the other direction.)⁵ (This corresponds to definition 8 of Section I.)

Definition 7—Elements that are neither complementary nor anticomplementary with each other are *competitive* with each other. (This corresponds to definition 9 of Section I.)

Competitive elements may show positive or negative indirect price effects, but these are not strong enough in the positive direction to result in complementarity or strong enough in the negative direction to result in anticomplementarity.

We may now rewrite Theorem 1 more concisely as:

Theorem 1'—The elements in an economic situation cannot all be complementary with each other.

We can also see now that this is only a special case of a still more general theorem:

Theorem 1''—The indirect price effects (or the cross-elasticities of substitution or transformation) cannot be all positive or all negative.

This is because every indirect price effect that is positive for B , because it increases the ratio B/C , must be negative for C because it *ipso facto* reduces the ratio C/B .

All these relationships are most easily seen where the variable elements A , B , and C are all inputs. A fall in the relative price of A will result in more of A being used as it is substituted for the other variable inputs. There may be a

⁵ Note that although "indirect price effect" is different in Section II, "complementarity" and "anticomplementarity" have the same meaning as in Section I.

reduction in both B and C , in which case A is competitive with both of these. But it is also possible for one of them, say B , to be complementary with A . Although its price has not fallen, more of B is used because more of A is used. C will then have to decrease all the more, not only because A has been substituted for $(B + C)$ (in the direct price effect), but also to offset the still greater increase in B at the expense of C (in the indirect effect). This reflects C 's being anticomplementary with A . Since A must be complementary with B if B is complementary with A , C must be anticomplementary with B as well as with A .

The only remaining possibility is for A to be complementary with C and therefore anticomplementary with B , when B will have to be anticomplementary with C too. This is completely symmetrical with the case just considered and exhausts all the possibilities where the three variable elements are all inputs. In any triad, either all pairs are competitive or one pair is complementary and the other two pairs are anticomplementary.

The analysis is identical for the case where the variable elements are the outputs X , Y , Z , except that, unlike the inputs, these all have the same sign as elements. (We will now use the letters A , B , C , etc., only for inputs and the letters X , Y , Z , etc., only for outputs.) An increase in the price of an output X will result in more of it being produced. This may be accompanied by a decrease in all the other outputs Y and Z , in which case there is no complementarity or anticomplementarity in production. All the elements are competitive. On the other hand, one of the other outputs, say Y , may increase. In that case, we say that Y is complementary with X and we also have to say that Z is anticomplementary with X and that Z is anticomplementary with Y (since X is complementary with Y); and conversely, when Z is complementary with X , Y must be anticomplementary with X and with Z . As in the previous case, complementarity arises only if the cross-elasticity of substitution is sufficiently greater than the direct elasticity of substitution.

But this still does not exhaust all the cases covered by Theorem 1. What if one of the variable elements is an output and the other are inputs, output X and inputs A and B being the variable elements?

A decrease in the price of A will result in an increase in the input of A (a decrease in this element). This may result in the other elements all increasing. More of the cheapened input A (less of element A) works with less of input B (more of element B) producing more of output X (more of element X). There is no complementarity and no anticomplementarity, and all the elements are competitive with each other.

But it is also possible for one of the other elements to be complementary with A and to decrease when element A decreases. Suppose element B is complementary with A . Element B then decreases (input B increases). Element X will then have to be anticomplementary and increases all the more. We may then say, if we wish, that input B being complementary with input A , more of B has to be used together with the increased A , with a correspondingly large increase in output X . Here complementarity looks perfectly normal.

More interesting is the case where the element that is complementary with input A , is an output so that when input A increases (element A decreases),

output X (and element X) decreases. Here we have the case of regression [2, p. 93] where the cheapening of a factor of production and an increase in its use leads to a decrease in output! Regression is nothing but complementarity between an output and an input, but it does not look so normal.

We can handle this better by looking at a reduction in the output of X as the feeding of the lost output back into the process, treating it like an input and giving this imaginary input the name D ($\equiv -X$). Similarly we may treat a saving in the input of factor B as an increase in the output of the economized input item, giving this imaginary output the name W ($\equiv -B$). We now have complementarity of D with A . More of input D is used together with more of input A (both of these elements decreasing) in order to produce a large increase in W which is anticomplementary with A . Formally, this is just like the case above where there was also a large increase in output (there of X , here of W) even though this called for using more of another factor (there B , here D) and we have more of both factors producing more of the product. Re-translating this into our original letters, we can say that the complementarity of X with A means that a cheapening of A makes it worthwhile to forego some output of X in order to save on the input of B , since the release of large quantities of B reduces the output of X by very little (because B is anticomplementary with A and with X).

Still more interesting is the case (with the same variable elements A , B , and X) in which there is an increase in the relative price of X . The direct price effect is an increase in element X (and output X). If there is no complementarity, the other elements both diminish. This means that the inputs of A and B both increase and we have the familiar normal increase in production in response to an increase in the price of the product, by increasing all the factors of production.

But suppose element A is complementary with element X . Then the increase in X is accompanied by a movement of element A in the same direction. But an increase in element A is a decrease in input A ! This is the other side of regression. This may be dealt with analogously. Treat the saving of a unit of factor A as the production of a unit of an imaginary product called V ($\equiv -A$). Then complementarity of V with X means that as more of X is produced, it is worth devoting more of factor B to the production of V —i.e., to the economizing of A . But there is another and a more attractive way of dealing with this case: A is nothing but an inferior good in the production of X and B is therefore a superior good.

There remains only the case where there is one input and two outputs. But since we can freely translate outputs into inputs and vice versa, this is symmetrical if not identical with the case we have already considered.

What may seem surprising is how the concept of inferior goods crept into our discussion. Inferior and superior goods belong to the income effect which seems to have been left behind when we assumed the "other elements" fixed, concentrating on the direct and indirect price effects that comprise what Hicks called the substitution effect.

The answer seems to be that it depends on what are the other elements fixed. As long as all the outputs or products are fixed, we may say that real income

is fixed and we have only price effects and no income effects. Only inputs or factors of production are variable and we can speak only of complementary, competing, and anticomplementary inputs—the substance of Hicks' substitution effect. Similarly, if all the inputs or factors are fixed and only outputs or products are variable, we can speak only of complementarity, competition, and anticomplementarity in production.

But as soon as we permit some of the variable elements to be inputs and others to be outputs, the line between income effects and price effects becomes impossible to apply because holding the other elements constant no longer means the same as holding the level of real income constant. A rise in an output price relatively to an input price (which is the same as a fall in an input price relatively to an output price) induces an increase in input and in output and this is an increase in income; and conversely, a fall in output price relatively to input price induces a decrease in income.

Worse still, even in the case where the variable elements are all inputs or are all outputs, the line disappears as soon as we recognize that economizing a factor is equivalent to increasing a product, and increasing a product without decreasing any other product is clearly congruent with an income effect. Complementarity between an input and an output means that when the output is increased, the input is diminished, so that the input is inferior. When inputs in general are increased so as to produce more of the output, less is used of the inferior input. Complementarity between an input and an output also means that when the input is increased, the output is diminished so that the output is a regressive good. Just as complementarity turns out to include inferiority and regression, so anticomplementarity turns out to include superiority and progression (antiregression). We get inferiority or superiority if the output price changes relatively to the other prices, and regression or progression if it is the input price that changes relatively to the other prices. The inferiority, normality, and superiority of inputs and the regressivity, normality, and progressivity of outputs turn out to be only other sets of names for the three basic relationships between elements: complementarity, competitiveness, and anticomplementarity. Hicks' income effect turns out to be a special case of the indirect price effect, which in turn is a part of Hicks' substitution effect.

All these relationships are illustrated in Figure 2 where *A*, *B*, and *C* stand for inputs and *X*, *Y*, and *Z* stand for outputs. In the trios of capital letters forming the headings of the various columns, a line (marked *c*) connecting two letters, indicates that the two elements represented by the letters are complementary; and a small *a* between two letters indicates that the two elements are anticomplementary. The absence of such a line or letter indicates the absence of complementarity and of anticomplementarity so that the elements are competitive. The plus and minus signs represent increases or decreases in outputs or inputs resulting from the changes indicated at the left of the row, and for every plus there must be a corresponding minus. The signs would have to be reversed for inputs if we were to keep to the language of elements and that would make it easier to check on the symmetry and on the equality of plus and minus signs, but it seems to be easier to follow the meanings if we keep to the

CASE I				
	$\begin{matrix} A \\ B \quad C \end{matrix}$	$\begin{matrix} A \\ \text{c. a} \\ B \quad a \quad C \end{matrix}$	$\begin{matrix} A \\ \text{a c} \\ B \quad a \quad C \end{matrix}$	$\begin{matrix} A \\ \text{a a} \\ B \quad \text{c c} \end{matrix}$
<i>A</i> cheaper	$A++ \quad B- \quad C-$	$A++ \quad B+ \quad C---$	$A++ \quad B--- \quad C+$	$A++++ \quad B-- \quad C--$
<i>B</i> cheaper	$A- \quad B++ \quad C-$	$A+ \quad B++ \quad C---$	$A-- \quad B++++ \quad C--$	$A--- \quad B++ \quad C+$
<i>C</i> cheaper	$A- \quad B- \quad C++$	$A-- \quad B-- \quad C++++$	$A+ \quad B--- \quad C++$	$A--- \quad B+ \quad C++$
CASE II				
	$\begin{matrix} X \\ Y \quad Z \end{matrix}$	$\begin{matrix} X \\ \text{c. a} \\ Y \quad a \quad Z \end{matrix}$	$\begin{matrix} X \\ \text{a c} \\ Y \quad a \quad Z \end{matrix}$	$\begin{matrix} X \\ \text{a a} \\ Y \quad \text{c c} \end{matrix}$
<i>X</i> dearer	$X++ \quad Y- \quad Z-$	$X++ \quad Y- \quad Z---$	$X++ \quad Y--- \quad Z+$	$X++++ \quad Y-- \quad Z--$
<i>Y</i> dearer	$X- \quad Y++ \quad Z-$	$X+ \quad Y++ \quad Z---$	$X-- \quad Y++++ \quad Z--$	$X--- \quad Y++ \quad Z+$
<i>Z</i> dearer	$X- \quad Y- \quad Z++$	$X-- \quad Y-- \quad Z++++$	$X+ \quad Y--- \quad Z++$	$X--- \quad Y+ \quad Z++$
CASE III				
	$\begin{matrix} A \quad B \\ X \end{matrix}$	$\begin{matrix} A \quad \text{c} \quad B \\ \text{a a} \\ X \end{matrix}$	$\begin{matrix} A \quad \text{a} \quad B \\ \text{c c} \\ X \end{matrix}$	$\begin{matrix} A \quad \text{a} \quad B \\ \text{a c} \\ X \end{matrix}$
<i>A</i> cheaper	$A++ \quad B- \quad X+$	$A++ \quad B+(c) \quad X++++_p$	$A++ \quad B---(c) \quad X-$	$A++++ \quad B-- \quad X++$
<i>B</i> cheaper	$A- \quad B++ \quad X+$	$A+(c) \quad B++ \quad X++++_p$	$A-- \quad B++++ \quad X++$	$A---(c) \quad B++ \quad X-$
<i>X</i> dearer	$A+ \quad B+ \quad X++$	$A++ \quad B++ \quad X++++$	$A- \quad B++++ \quad X++$	$A++++ \quad B- \quad X++$
CASE IV				
	$\begin{matrix} A \\ X \quad Y \end{matrix}$	$\begin{matrix} A \\ \text{c a} \\ X \quad a \quad Y \end{matrix}$	$\begin{matrix} A \\ \text{a c} \\ X \quad a \quad Y \end{matrix}$	$\begin{matrix} A \\ \text{a a} \\ X \quad \text{c c} \quad Y \end{matrix}$
<i>A</i> cheaper	$A++ \quad X+ \quad Y+$	$A++ \quad X- \quad Y++++_p$	$A++ \quad X++++_p \quad Y-$	$A++++ \quad X++ \quad Y++$
<i>X</i> dearer	$A+ \quad X++ \quad Y-$	$A- \quad X++ \quad Y---(c)$	$A++ \quad X++++ \quad Y--$	$A++++ \quad X++ \quad Y+(c)$
<i>Y</i> dearer	$A+ \quad X- \quad Y++$	$A++ \quad X-- \quad Y++++$	$A- \quad X---(c) \quad Y++$	$A++++ \quad X+(c) \quad Y++$

FIGURE 2

English usage. The number of plus or minus signs indicate the number of influences that would cause the element to vary in the direction indicated. They must not be understood to indicate the *size* of a change because a single influence in one instance might be quantitatively greater than as many as four influences in another instance. It must also be remembered that the anticomplementarity the third element with the two complementary elements refers only to all the other elements (other, that is, than the complementary pair) *taken as a whole* if there are more than one of them. Any proper subset of these may be competitive or even complementary with the complementary pair.

In Case I of Figure 2, the three variable elements are all inputs. (If there are more than three, all those left after two have been considered may be treated as the third element.) The first column shows three competitive inputs. There are two plus signs attached to the *A* in the first row of the first column to indicate that *A* is substituted for *B* as well as for *C*. The minus signs attached to the *B* and the *C* show the other side of the same substitution. The number of plus signs in each case must therefore be equal to the number of minus signs. The same relationship is seen in the next two rows in this column.

The second column in Case I shows *A* and *B* complementary so that *A* and

C are anticomplementary as also are B and C . The first row here differs from the first row in the first column because the complementarity between A and B means that there is an indirect price effect causing B to be substituted for C to such a degree that the $B-$ is turned into a $B+$. This is balanced by the two additional minus signs attached to the C , one to balance the removal of the original minus attached to the B and another to balance the plus put in its place. As before, the total number of plus signs is equal to the total number of minus signs. The second row shows the same thing for a cheapening of B instead of a cheapening of A . The third row is different because it is now not one of the complementary inputs that is cheapened, but the one that is anticomplementary with the other two. The cheapening of C causes C to be substituted for both A and B . But the complementarity causes A to be reduced further because there is less of its complement B , and it causes B to be reduced further because there is less of its complement A . A and B therefore given an additional minus each and two more plus signs are added to C as more of it has to be added to compensate for both of these further contractions if output (and any other elements) are to be held constant. The next two columns of Case I follow exactly the same principles.

Case II shows the completely symmetrical relationships for three variable outputs X , Y , and Z , Case III shows two variable inputs A and B , and one variable output X , and Case IV shows one variable input A and two variable outputs X and Y . An inferior input is indicated by i , a superior input by s , a regressive output by r , a progressive output by p . (These subscripts are put in parentheses where inputs are treated as outputs or outputs as inputs.)

The blurring of the line between income effects and price effects is a result of an ambiguity of the word "income" that is inevitable as soon as it is applied to more than one homogeneous item. In the analysis of income, this is avoided by treating the utility produced by the consumption goods (plus or including saving), or the level of income, as such a single homogeneous item. In the analysis of production on the same line as consumption, it seems natural to consider the restriction imposed by a constancy of the "other elements," when some are varied in response to changes in relative price, as corresponding to the restriction imposed by a constancy of the level of income. This is most natural when the "other elements" which are kept constant consist of all the outputs or products. The analogy still seems to make some kind of sense, as indicating a given level, where the constant "other elements" consists of all the inputs. The analogy is clearly invalid where the varied elements include an input and an output because that permits production and consumption to increase or decrease, but it is only the *visibility* of the invalidity that is affected. The same trouble exists even when the variable elements are all inputs or all outputs. The increase in one output at the expense of a decrease in another output is no different from an increase in an output at the expense of an increase in an input; and a decrease in one input at the cost of increasing another input is no different from a decrease in an input at the cost of decreasing an output. They are just like an increase or a decrease in production.

One is tempted to avoid these embarrassments by simply defining an in-

crease in an output as an increase in output-income, and an increase in an input as an increase in input-income. It is in relation to increases in output-income that an input may be inferior or superior, and it is in relation to an increase in input-income that an output may be regressive or progressive.

Our framework, however, still prevents a "Giffen case" from appearing. A "Giffen case" means an increase in an output when its price falls (or an increase in an input when its price rises); i.e., an element moving in the opposite direction to the change in its price. This can occur only if something other than the change in relative prices permits an increase in the element which more than offsets the direct price effect which, according to Theorem 3, is always positive, i.e., in the same direction as the price change. That something must mean not merely an increase in output-income or in input-income but an increase in income in the general and original sense of an increase in all the elements or an increase in some elements without any elements decreasing, and that is ruled out by Theorem I. Since an input is a negative element, income, or the sum of *all* the elements, consists of output-income minus input-income. Our elimination of income changes in this general sense does not prevent the emergence of inferiority, superiority, progression and regression as aspects of complementarity and anticomplementarity, but it does prevent the emergence of a Giffen effect.

A. P. LERNER*

REFERENCES

1. J. R. HICKS, *A Revision of Demand Theory*. Oxford 1956.
2. ———, *Value and Capital*. Oxford 1939.

*The author is professor of economics at Michigan State University, East Lansing, Michigan. He is indebted for a number of clarifications and corrections to discussion with students and colleagues and especially to Boris Pesek.

MATHEMATICAL APPENDIX

Let us consider a general case of n commodities, labeled $1, \dots, n$. Quantities of n commodities to be produced or to be consumed are presented by vectors with n components; thus $x = (x_1, \dots, x_n)$ stands for a situation at which each commodity i is produced by the amount x_i or consumed by the amount $-x_i$ ($i = 1, \dots, n$). An opportunity set T consists of all commodity bundles which may be conceivably chosen. In production theory, it comprises all input-output combinations which are feasible under given technological conditions, while in consumption theory, it consists of all commodity bundles which give at least as much utility as a given level of utility.

If $p = (p_1, \dots, p_n)$ stands for a price vector, of which the i th component represents the price of the i -th commodity, then what Lerner calls an economic situation corresponds to choosing a commodity bundle (x_1, \dots, x_n) for which the (net) revenue $\sum_{i=1}^n p_i x_i$ is maximized in the opportunity

set T . The optimum commodity bundle associated with price vector $p = (p_1, \dots, p_n)$ will be denoted by $(x_1(p), \dots, x_n(p))$; formally,

$$(1) \quad (x_1(p), \dots, x_n(p)) \in T,$$

and

$$(2) \quad \sum_{i=1}^n p_i x_i(p) \geq \sum_{i=1}^n p_i x_i, \text{ for all commodity bundles } (x_1, \dots, x_n) \text{ in } T.$$

The maximized revenue, which depends on prices (p_1, \dots, p_n) , is denoted by $r(p)$:

$$(3) \quad r(p) = \sum_{i=1}^n p_i x_i(p).$$

It is postulated that the optimum commodity bundle $x(p) = (x_1(p), \dots, x_n(p))$ uniquely exists for any positive price vector $p = (p_1, \dots, p_n)$, and that $x_i(p)$ are continuously differentiable.

The hypotheses postulated above imply all the fundamental properties concerning the rates of changes in optimum commodity bundles with respect to price changes. The derivation presented here is based on Lionel W. McKenzie's method, as introduced in his article "Demand Theory without a Utility Index," *Review of Economic Studies* (1956-57), 24, 185-89.

Let the prices be changed from (p_1, \dots, p_n) to $(p_1 + \Delta p_1, \dots, p_n + \Delta p_n)$ and correspondingly the optimum commodity bundle be changed from (x_1, \dots, x_n) to $(x_1 + \Delta x_1, \dots, x_n + \Delta x_n)$. Since the commodity bundle (x_1, \dots, x_n) is optimum when prices are (p_1, \dots, p_n) , the revenue evaluated at prices (p_1, \dots, p_n) is greater at (x_1, \dots, x_n) than at any other commodity bundles in the opportunity set T . In particular,

$$\sum_{i=1}^n p_i x_i \geq \sum_{i=1}^n p_i (x_i + \Delta x_i),$$

hence,

$$(4) \quad \sum_{i=1}^n p_i \Delta x_i \leq 0.$$

Similarly, since $(x_1 + \Delta x_1, \dots, x_n + \Delta x_n)$ is optimum with respect to $(p_1 + \Delta p_1, \dots, p_n + \Delta p_n)$,

$$(5) \quad \sum_{i=1}^n (p_i + \Delta p_i)(-\Delta x_i) \leq 0.$$

Adding (5) to (4), we have

$$(6) \quad \sum_{i=1}^n \Delta p_i \Delta x_i \geq 0.$$

It is first observed that

$$(7) \quad \sum_{i=1}^n p_i \frac{\partial x_i}{\partial p_j} = 0, \quad j = 1, \dots, n;$$

namely, the effects of a change in the price of a commodity on the optimum quantities cancel out if they are weighted by respective prices. It may be noted that the cross derivatives $-\partial x_i/\partial p_j$ are exactly equal to Slutsky's substitution terms in consumption theory.

To see (7), let us consider a change in prices for which

$$\Delta p_1 = 0, \dots, \Delta p_j > 0, \dots, \Delta p_n = 0.$$

Divide (4) and (5) by Δp_j and let Δp_j tend to zero, then we have (7).

The relation (7) may be used to derive the following identity:

$$(8) \quad \frac{\partial r}{\partial p_j} = x_j(p), \quad j = 1, \dots, n,$$

where $r=r(p)$ the revenue function defined by (3). Indeed, differentiate (3) partially with respect to p_j to get

$$\frac{\partial r}{\partial p_j} = \sum_{i=1}^n p_i \frac{\partial x_i}{\partial p_j} + x_j(p),$$

which, due to (7), implies (8).

Differentiating (8) with respect to p_k and making use of Young's theorem, we have the proposition that the price effects are symmetric:

$$(9) \quad \frac{\partial x_j}{\partial p_k} = \frac{\partial x_k}{\partial p_j}, \quad \text{for all } j, k = 1, \dots, n.$$

It is also shown that the price effects $\partial x_j/\partial p_k$ are positive semidefinite; namely,

$$(10) \quad \sum_{j,k=1}^n \frac{\partial x_j}{\partial p_k} v_j v_k \geq 0, \quad \text{for all } v = (v_1, \dots, v_n).$$

The validity of the relation (10) may be indicated by (6). It is formally shown as follows: Define the function $\varphi(t)$ by

$$(11) \quad \varphi(t) = \sum_{i=1}^n p_i x_i(p + tv) - \sum_{i=1}^n p_i x_i(p).$$

We have from (2) that

$$\varphi(t) \leq \varphi(0) = 0, \quad \text{for all } t \geq 0.$$

Differentiating $\varphi(t)$ with respect to t , we get:

$$\varphi'(t) = \sum_{i,j=1}^n p_i \frac{\partial x_i(p + tv)}{\partial p_j} v_j;$$

but, from (7),

$$\sum_{i=1}^n (p_i + tv_i) \frac{\partial x_i(p + tv)}{\partial p_j} = 0.$$

Hence

$$(12) \quad \varphi'(t) = -t \sum_{i,j=1}^n \frac{\partial x_i(p + tv)}{\partial p_j} v_i v_j, \quad \text{for all } t \geq 0.$$

On the other hand, we have from (11) that

$$(13) \quad \varphi'(0) \leq 0.$$

The relations (12) and (13) together imply the inequality (10).

The inequality (10) in particular implies that

$$(14) \quad \frac{\partial x_i}{\partial p_i} \geq 0, \quad i = 1, \dots, n;$$

namely, the own price effect is positive (or possibly zero).

The relation (7) combined with (9) yields Euler's identity:

$$(15) \quad \sum_{i=1}^n p_i \frac{\partial x_j}{\partial p_i} = 0, \quad j = 1, \dots, n,$$

which may be directly derived from the zero-th homogeneity of the functions $x_1(p), \dots, x_n(p)$.

It is easily seen that Lerner's Theorems 1-5 in Section II are simple consequences of (7), (14), and (15) above.

Definition: Commodity j is complementary with commodity i , if

$$(16) \quad \frac{\partial x_j}{\partial p_i} \geq 0;$$

commodity j is anticomplementary with a commodity i , if

$$(17) \quad \frac{\partial x_j}{\partial p_i} < 0, \quad \frac{\partial \left(\sum_{k \neq i,j} p_k x_k \right)}{\partial p_i} > 0;$$

and commodity j is competitive with commodity i , if

$$(18) \quad \frac{\partial x_j}{\partial p_i} < 0, \quad \frac{\partial \left(\sum_{k \neq i,j} p_k x_k \right)}{\partial p_i} \leq 0.$$

From the definition, any commodity j is either complementary, anti-complementary, or competitive with any other commodity i . The symmetry (9) implies that if commodity j is complementary with commodity i , then commodity i is complementary with j , and vice versa. In the case which involves only three commodities, it is seen from the definition that i and j are complementary if and only if i is anticomplementary with k ; hence, if i is anticomplementary with k then k is anticomplementary with i . In the general case in which the number of commodities is greater than three, however, it may be the case that commodity j is anticomplementary (or competitive) with commodity i , but commodity i is competitive (or anti-complementary) with commodity j .

In view of (7) and (14), if commodity j is complementary with commodity i , then

$$(19) \quad \frac{\partial \left(\sum_{k \neq i, j} p_k x_k \right)}{\partial p_i} \leq 0.$$

Finally, Lerner's direct and indirect price effects may be stated in our terminology by the following:

Definition: The price effect P_{ij} of i with respect to j is defined by

$$(20) \quad P_{ij} = \frac{\partial \left(x_i / \sum_{k \neq i} p_k x_k \right)}{\partial p_j},$$

where i and j may be an identical commodity.

HIROFUMI UZAWA*

*The author is associate professor of economics at Stanford University.

The Effect of Integration on Property Values

The purpose of this paper is to explore the reaction of neighborhood housing prices to racial integration. What happens to property values when one or more Negro families move into a previously all-white neighborhood? The answer arrived at in the analysis to follow is based on a study in Ann Arbor, Michigan.

The data are analyzed in two different ways. First, an analysis is carried out on houses that sold at least two times—once before and once after neighborhood integration. For purposes of comparison, data on similarly-priced houses in all-white areas are also included. However, it may be that integration affects property values some years after the first Negro family moves into the neighborhood. Houses which sold twice at least five years subsequent to Negro entry are studied in an attempt to investigate any longer-run effect of integration on property values.

The second method uses assessed valuations of properties. Comparisons are

made over time on the basis of a ratio of market to assessed value for different neighborhoods and for different sections within a neighborhood. The trends established by these ratios over a number of years are examined to see if property values do react to integration and if so in what way. The use of assessed values for this purpose is supported by a regression analysis.

Both methods of analyzing the data point to the conclusion that racial integration does not affect property values.

The approach used here is an alternative to the "control area" technique used by Laurenti [1] and in the Kalamazoo study [2]. In their approach, areas of recent integration are compared to all-white areas which match (as nearly as possible) the integrated areas in all essential characteristics except Negro occupancy. However, because of the many dimensions in which neighborhoods vary, good control areas are difficult to find. Factors such as services available, type of nearby construction, zoning ordinances, and accessibility to schools and business districts are just a few of the elements whose variation can alter the comparability of neighborhoods.

Although differing in method our analysis supports the findings of these earlier studies. Laurenti's basic conclusion is that integration is not associated with any single pattern in housing prices. However, he finds that integration is more often associated with stability or price improvement than it is with price softening [1, pp. 5-49]. Although the Kalamazoo study was primarily addressed to sociological questions, some price evidence is given. The major finding, for this part of the study, is that market values are not affected by integration [2, pp. 20-25].

I. *First Method*

The starting point in this analysis is a comparison of the values of five houses which sold twice—once before and once after area integration. Data from two integrated neighborhoods covering the period between January 1950 and December 1960 are used.¹ Integration occurred in 1955 in area A and 1958 in area B. By 1960 only one Negro family had purchased a home in each of these areas. Both neighborhoods consist of houses facing short residential streets. There are 35 such houses in area A and 20 in area B. The houses range in price from \$13,000 to \$31,500 in area A and \$10,000 to \$17,500 in area B.² Most of the homes have five rooms and were built in the early 1950's. Table 1 shows that the market value for each of the houses was higher after than before integration. The average increase in actual prices is substantial. However, when the inflation that occurred in construction costs is allowed for,³ only a slight average increase primarily due to the influence of one house is apparent.

¹ Some of this statistical information as well as that presented later was secured from personal interviews and from the records of real estate brokers. Most of the data, however, was obtained from the City Assessor's Office. A considerable amount of the price information was computed from the face value of the federal tax stamps affixed to property deeds. This is a simple procedure because the tax is paid at a rate of \$1.10 per \$1,000 of purchase price.

² The figures show the range in market value for all the transactions recorded for each neighborhood. All of this data is used in the analysis in the second section of the paper.

³ Only prices relevant to the residential housing industry in this part of Michigan are

TABLE 1—PRICES OF HOUSES IN INTEGRATED AREAS SELLING BETWEEN 1950 AND 1960:
HOUSES WHICH SOLD BOTH BEFORE AND AFTER INTEGRATION
(Area A integrated in 1955 and Area B in 1958)

Houses	Years Sold	Actual Market Value			Deflated Market Value (1960 \$)		
		Before	After	Difference	Before	After	Difference
#1-A	1955, '58	\$26,500	\$31,500	+\$5,000	\$30,377	\$33,248	+\$2,871
#2-B	1954, '59	13,500	14,500	+ 1,000	15,475	14,802	— 673
#3-B	1955, '60	10,000	12,000	+ 2,000	11,460	12,064	+ 604
#4-B	1955, '59	13,000	14,500	+ 1,500	15,466	14,802	— 664
#5-B	1954, '59	12,000	13,400 ^a	+ 1,400	14,450	13,574	— 876
Average values		15,000	17,180		17,446	17,698	
Average differences				+ 2,180			+ 252
Standard error of average differences (1 sigma)				(690)			(610)

^a This is an adjusted figure. It takes account of an improvement made to the property during the time interval between sales.

The observed increase in actual prices is fairly well accounted for by the rise in construction costs. In constant dollars (1960 = 1.00) the average price increase from first to second sale is not statistically significant.

The sales prices of houses in all-white neighborhoods that sold twice between January 1950 and December 1960 are now considered. The houses in the all-white areas satisfy three requirements: First, the initial sales prices of these houses are within the price range of corresponding sales in the two integrated areas. Second, the houses sold twice during the same time-period in which houses in the integrated areas sold. Finally, the assessed value of each house was not changed during the time interval between first and second sale. Table 2 shows price data obtained from all-white areas. The findings are quite similar to those in Table 1. Ten of the twelve houses increased in value from first to second sale. The increase in average price in the all-white area is not as large as in the integrated area, but the standard errors show that the observed differences in real market value between the two cases are not significant at the 5 per cent level.⁴

The final comparison in this part of the study involves houses which sold subsequently to area integration. Area C was integrated in 1945 and as of 1960 about 30 per cent of the occupants were Negro. Some of the houses in this area sold at least twice between 1950 and 1960. An investigation of the price behavior of these houses should reflect any longer-run effect of integration.⁵

used in the price index. These "Comparative Cost Multipliers" were obtained from the Assessor's Office. For the relevant years they are:

1950 = 1.3595	1953 = 1.2295	1956 = 1.0995	1959 = 1.0193
1951 = 1.2783	1954 = 1.2045	1957 = 1.0678	1960 = 1.0000
1952 = 1.2568	1955 = 1.1463	1958 = 1.0523	

⁴ The standard error of the difference between mean differences is 1.06 sigmas.

⁵ The assessor's records only go back to 1944; otherwise it might have been possible to obtain useful preintegration price data on these houses.

TABLE 2—PRICES OF HOUSES IN ALL-WHITE AREAS: HOUSES WHICH SOLD
TWO TIMES BETWEEN 1950 AND 1960

Houses	Years Sold	Actual Market Value			Deflated Market Value (1960 \$)		
		First	Second	Difference	First	Second	Difference
#1	1953, '56	\$13,500	\$16,500	+\$3,000	\$16,598	\$18,142	+\$1,544
#2	1952, '56	13,500	14,000	+ 500	16,967	15,393	- 1,574
#3	1953, '59	19,000	20,000	+ 1,000	23,361	20,386	- 2,975
#4	1952, '59	21,000	22,000	+ 1,000	26,393	22,425	- 3,968
#5	1950, '51	14,000	14,000	—	19,033	17,896	- 1,137
#6	1952, '54	16,000	18,500	+ 2,500	20,109	22,283	+ 2,174
#7	1953, '56	7,000	9,000	+ 2,000	8,607	9,896	+ 1,289
#8	1950, '52	14,000	15,500	+ 1,500	19,033	19,480	+ 447
#9	1950, '52	7,000	5,500	- 1,500	9,517	6,912	- 2,605
#10	1956, '59	20,000	20,500	+ 500	21,990	20,896	- 1,094
#11	1957, '59	27,500	30,000	+ 2,500	29,365	30,579	+ 1,214
Average Values		15,681	16,863		19,179	18,572	
Average Differences				+1,182			- 607
Standard Error of Average Differences (1 sigma)				(378)			(533)

TABLE 3—PRICES OF HOUSES IN AN INTEGRATED AREA SELLING BETWEEN 1950 AND 1960:
HOUSES WHICH SOLD AT LEAST TWICE AFTER AREA INTEGRATION

(Area integrated in 1945)

Houses	Years Sold	Actual Market Value			Deflated Market Value (1960 \$)		
		First	Second	Difference	First	Second	Difference
#1	1954, '56	\$12,500	\$15,000	+\$2,500	\$15,056	\$16,493	+\$1,437
#2	1951, '54	12,500	17,000	+ 4,500	15,979	20,477	+ 4,498
#3	1950, '57	9,500	14,000	+ 4,500	12,915	14,949	+ 2,034
#4	1952, '55	6,500	7,000	+ 500	8,169	8,024	- 145
#5	1950, '59	13,500	14,500	+ 1,000	18,353	14,780	- 3,573
#6	1950, '52	10,000	11,000	+ 1,000	13,595	13,825	+ 230
#7	1951, '58	16,000	18,000	+ 2,000	20,453	18,491	- 1,962
#8	1954, '58	11,000	13,500	+ 2,500	13,250	14,206	+ 956
#9	1952, '53	17,000	17,500	+ 500	21,366	21,516	+ 150
#10	1954, '57	10,000	13,500	+ 3,500	12,045	14,415	+ 2,370
#11	1954, '56	5,500	6,500	+ 1,000	6,625	7,148	+ 523
#12	1953, '55	10,500	11,000	+ 500	12,910	12,609	- 301
#13	1955, '58	12,500	14,000	+ 1,500	14,329	14,732	+ 403
#14	1957, '58	12,500	14,000	+ 1,500	13,348	14,732	+ 1,384
#15	1950, '54	11,000	11,000	—	14,955	13,250	- 1,705
#16	1953, '57	28,000	31,500	+ 3,500	34,426	33,636	- 790
#17	1957, '59	20,500	19,000	- 1,500	21,890	19,367	- 2,523
Average Values		12,882	14,588		15,863	16,038	
Average Differences				+ 1,706			+ 176
Standard Error of Average Differences (1 sigma)				(350)			(400)

Area C is much larger and more heterogeneous than the other integrated areas. It consists of about 700 homes, some built prior to the 1860's, others in the early 1950's, with substantial variation in both number of rooms and market value. Sizes range from 4 to 12 rooms and market value from \$6,000 to \$35,000. Table 3 shows the data on postintegration sales. With one exception, all of the houses increased in actual market value from first to second sale. On the whole the results are very similar to those obtained from the two previous comparisons.

The findings for this part of the study are contrary to the belief sometimes heard that integration depresses property values. The similarity in price behavior of the three cases studied suggests that integration does not affect neighborhood property values.

II. *Second Method*

In this part of the analysis, the behavior of housing prices is expressed in terms of a ratio of market to assessed value.⁶

Two questions concerning the adequacy of assessed values must first be answered. The first question is: Are houses in different neighborhoods assessed at about the same rate? The data in Table 4 suggest that they are. Although

TABLE 4—HOUSING DATA FOR THREE AREAS

Description	Area A	Area B	Area C
Average market value (1960 dollars)	\$22,160	\$13,940	\$16,814
Average assessment (dollars)	5,280	3,472	3,851
Average ratio:assessment to price	.238	.249	.230
Number of sales	22	23	135

differing substantially in average price, the neighborhoods (A, B, C) are quite comparable in terms of the ratio of assessed value to market value. In this respect, two of the areas differ by less than 1 per cent and the total variation is only 1.9 per cent.

The second question is: Are houses in different price ranges assessed at about the same rate? A regression analysis was carried out to provide an answer to this question. Treating each area separately, the data points used to determine the regression equation were obtained by averaging all transactions and their associated assessed values for all houses which sold in the same year.⁷

⁶ Assessments in Ann Arbor are based on "real" cost. Using 1941 price levels, the assessor attempts to compute the replacement cost of properties. Usually, each property is assessed only one time. If improvements to a property are recorded, the assessed-value figure is adjusted accordingly.

⁷ There are no sales recorded for some years within the time period covered by this study. The number of average yearly transactions recorded for each area is as follows: Area A: 7; Area B: 6; Area C: 11. The closeness of fit observed in the regression arises from the fact that averages rather than data on individual sales are used in this analysis.

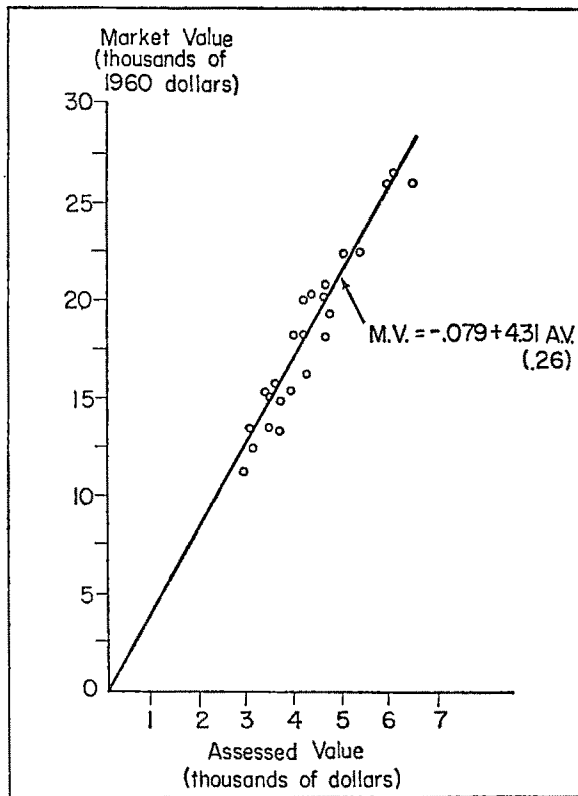


FIGURE 1. THE RELATIONSHIP OF ASSESSED VALUE (A.V.) TO MARKET VALUE (M.V.)

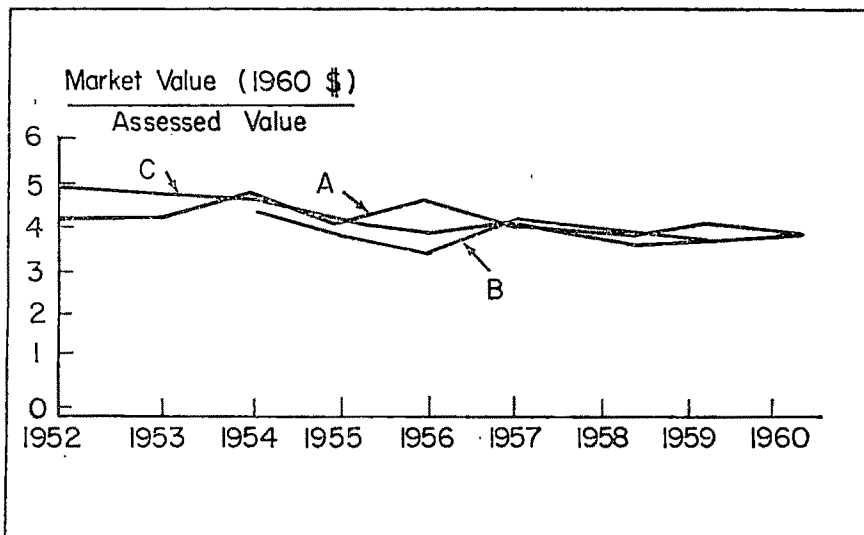


FIGURE 2. TREND OF AVERAGE PRICE TO AVERAGE ASSESSED VALUE

TABLE 5—HOUSING DATA TABULATION ON THE BASIS OF NEGRO OCCUPANCY

	Area C		
	Sections Having No Negro Occupants	Sections Where Negroes are a Majority	All Other Sections (Sections Having about 20 Per Cent Negro Occupants)
Average market value (1960 dollars)	\$23,343	\$13,794	\$14,480
Average assessment (\$)	5,506	3,015	3,383
Average ratio:assessment to price	.235	.219	.233
Number of sales	31	44	60

The regression line and its scatter are shown in Figure 1. The regression equation is:

$$M.V. = -.079 + 4.31A.V. \\ (.26)$$

This relationship is a highly significant one and over 85 per cent of the variation in real market value is associated with quality of house as measured by assessed value.⁸ As is apparent in Figure 1, there is no substantial curvature embodied in the relationship: no bias in assessments according to price class is apparent. The use of assessed values as a control for quality of house appears justified.

Let us now see how market values in the three areas vary over time. Figure 2 illustrates the similarity of the three areas with respect to price behavior. A slight decline, common to each area, is observed. In the year following integration (1955 for area A and 1958 for area B), prices improved. The general impression, however, seems to be one of stability; that is, the trend in actual market value parallels, quite closely, the trend in construction costs over the relevant time period. This finding is identical to the one found earlier in the paper by a different method. Surely the presence or absence of Negroes is not reflected by the price data.

One may still wonder if any price differential can be observed between market values in all-white sections close to Negro occupants and market values in the integrated sections. Area C is a neighborhood that permits such a comparison. Within area C, some parts are predominantly Negro and other are all-white. A classification was made, selecting those sections having at least a 50 per cent Negro population for comparison with those parts having no Negro population. This information is summarized in Table 5. There is a large difference between these sections with respect to average market value, but in the case of the ratios of assessed value to market value there is only a small

⁸ $F = 267$; $F.01 = 7.95$; $R^2 = .87$.

difference—1.6 per cent. If anything, prices are higher relative to assessed values in the sections that have the highest percentage of Negro occupants.

WILLIAM M. LADD*

REFERENCES

1. LUIGI LAURENTI, *Property Values and Race: Studies in Seven Cities*, Berkeley and Los Angeles, University of California Press, 1960.
2. *Research Report on Integrated Housing in Kalamazoo*. Kalamazoo: W. E. Upjohn Institute for Community Research, July 1959.

*The study reported here was carried out as a project of the Research Seminar in Quantitative Economics, University of Michigan. The author, assistant study director, Survey Research Center, University of Michigan is indebted to many people for help given in connection with this study. He wishes to express special appreciation to John Elm, Deputy Assessor, Ann Arbor; James N. Morgan and Daniel B. Suits, University of Michigan; and John A. Cook for his assistance in the collection of some of the data.

BOOK REVIEWS

General Economics; Methodology

Economic Performance—An Introduction to Economics. By H. H. VILLARD.
New York: Holt, Rinehart and Winston, 1961. Pp. xiii, 655. \$6.50.

Professor Villard introduces the student to economics in an unconventional way by concentrating on the short-run and long-run factors that influence the economic performance of our economy. He examines the roles of the economizing process, economic development, and income stabilization in determining the performance of the economy, and concludes that faster economic development or growth would make the most contribution to an improvement in performance.

On the whole, Villard presents a persuasive case for the paramount significance of rapid economic development as a measure of and means to superior performance in our economy. The marked difference in improvement of economic well-being that results from fast rather than from slow rates of economic growth is dramatized in his analysis. Thus over a ten-year period, a 3 per cent productivity factor provides a 16 per cent greater increase in output than a 1.5 per cent factor, while a 4.5 per cent productivity factor provides a 34 per cent greater increase in output than a 1.5 per cent factor. He also derives imaginative data which suggest that over a ten-year period, increases in output due to productivity gains will tend to overshadow the improvement in economic performance that is possible from the elimination of the wastes of advertising, monopoly, labor unions, tariffs, agriculture, restrictive price competition, consumer ignorance, and unemployment. And Villard demonstrates further that an increase of 3 per cent in the annual productivity factor would contribute vastly more to an improved economic performance over an extended period of 25 years than would the realization of the most efficient economizing processes.

Although Villard develops a convincing argument for the importance of faster economic growth, his treatment of several other facets of economic performance leaves me with some misgivings. My concern is not with centering the study of economics around economic performance, for this seems to me to be a very promising approach. Rather I am troubled by his inadequate discussion of the basic tools of analysis which he and most economists agree are necessary for an understanding of economic problems. In part my criticism stems from the organization of the book, for Villard interrupts the continuity of discussion in the early chapters by referring on numerous occasions to figures, tables, and data that are to be found in other chapters. More important, however, the sections on demand and supply tools of analysis and on money and banking lack clarity, and contain inaccuracies as well. The treatment of programs to aid agriculture, for example (pp. 296-97), provides an especially glaring instance of an error in analysis. For the agricultural surplus described

here results only if the supply curve is perfectly inelastic and not as it is depicted in Figure 25-1. With the given long-run supply curve shown in the figure, the amount supplied at the high price op' would greatly exceed the $a'a$ stated in the text. And in analyzing Situation 13 (pp. 544-45) he overlooks the important point that the individual bank itself has contributed to credit creation because the money supply is larger by the \$8 of currency withdrawn into general circulation and later deposited in other banks.

Elementary students will also have difficulty in following Villard's analysis at several other points because he presents insufficient detail in developing a number of analytical concepts. Thus although he minimizes the use of marginal analysis in the elementary course—and rightly so in my judgment—too little attention is given to presenting the meaning of the marginal analysis in some of the instances in which it is employed (pp. 171-72). Other concepts that should be clarified include his statements on elasticity and marginal revenue (p. 91); on the short-run supply curve (p. 129); on bank credit creation (pp. 532, 545); and on the multiplier (pp. 584-88).

The chapter on natural monopolies deserves commendation for its very clear discussion of the costs and problems involved in government ownership or regulation of natural monopolies. Of special interest also is Villard's demonstration in another chapter that there would be surprisingly little improvement in the economic welfare of the average income recipient if all upper incomes were reduced to $2\frac{1}{2}$ times the national average.

The strongest points of the book are the detailing of the many perplexing problems that are associated with accelerating economic development and the discussion of the improvement in economic performance that would result from faster economic growth and from the elimination of economic waste. The book must be found wanting, however, as an elementary introduction to the economizing process.

KENNETH D. ROOSE

Michigan State University, Oakland

Economics. By ABRAHAM L. GITLOW. New York: Oxford University Press, 1962. Pp. xxii, 743. \$7.50. Accompanying workbook.

The latest entry into the overcrowded Principles market follows the established pattern of minimum differentiation. The topics covered, the organization, and the mix of theory, institutional material, and policy are about what one would expect; however, there are a few surprises.

There is an excellent chapter on the neglected topic of conservation, with special emphasis on minerals, farmland, water, and forests. And there is an extended review of the various ways society has sought to protect people from the hazards of modern industrialism through such means as social security, unemployment compensation, workmen's compensation, private life insurance, and pension plans. Finally, the lively and enthusiastic presentation, replete with adages and admonitions that an important point has just been made, is frequently punctuated with long quotations from other writers, quotations which sometimes serve to carry the burden of the discussion; on the whole the technique is successful.

The theme of the book, Mr. Galbraith notwithstanding, is scarcity and choice, and the crucial issue of our time, as stated in the Preface, is whether society should rely on the free market or central planning in making its decisions; and one's choice, Gitlow argues, depends on whether primacy is given to individual freedom and individual want satisfaction or social goals. In the end, Gitlow takes his stand in favor of the free consumer but concedes that the choice is not either/or but rather one of degree; thus the crucial problem facing the members of society is one of choosing "the mix of free market and central economic direction truly consistent with their goals of individual freedom and social welfare. May they avoid pursuing the one so far that they lose the other" (p. 721).

The presentation is somewhat uneven in quality. Generally speaking, Gitlow is quite effective in microanalysis and in the descriptive sections. The chapters on demand, cost, competitive pricing, marginal productivity, and wage theory are models of care, clarity, and rigor, and the accompanying tables and graphs are as well done as any I have seen. Many will also appreciate the factor of production approach to the growth process. Gitlow's discussion of price indexes, labor force data, conservation, organized labor, income distribution, and social security represents descriptive economics at its best. The only exceptions to the strong showing of the microeconomic and descriptive chapters occur in the chapters on agriculture, oligopoly, and antitrust. Although the chapter on agriculture contains some interesting statistics, the discussion is so burdened with facts that the analysis and the policy alternatives seem to get lost. Oligopoly pricing is polished off in three paragraphs and antitrust emerges as a string of cases, amorphous and inane. To what extent this less satisfactory showing in these areas is due to the state of economics, I leave to the reader.

The macroeconomic analysis is less imposing. Chapter 2, ostensibly an introductory chapter on money, offers the student a potpourri of topics including, *inter alia*, hoarding and dishoarding, government borrowing, and the relationship of money to the price level; such delicate topics could be handled more intelligibly and with more finesse at a later stage in the theoretical development. Business cycles are treated descriptively, in the tradition of Mitchell, without the benefit of theory. And income determination is not clearly presented: for example, under the topic heading, "Fluctuations in National Income and Employment," Gitlow attempts to explain the equilibrium level of income in terms of the relationship between current and planned investment (pp. 151-53). There is no explanation of how the two can differ, and no explanation of how this relationship is connected, if at all, with the saving and investment relationship; it will not be surprising if the student finds this tough going.

There are a few minor annoyances. An inelastic demand is listed as one of the six conditions necessary for absolute monopoly (p. 409). Some will certainly question the implication of the statement that Burns and Mitchell demonstrated "some tendency for two or three minor cycles to occur within each major cycle" (p. 126). Finally, it is unfortunate that in discussing the Clayton Act Gitlow presents the unamended provisions governing price discrimination and mergers (p. 448).

The weight of my criticisms should not be exaggerated. Generally, the technical analysis is competent, demanding but not overly rigorous. The institutional topics are succinctly stated and the statistics are up-to-date and skillfully integrated with the discussion. While Gitlow's policy preferences are quite clear, he does not force his opinions on the reader. Thus I would judge the book to be generally satisfactory and a valuable teaching aid.

BRYCE J. JONES

*St. Joseph's College
Rensselaer, Indiana*

Schein und Wirklichkeit in der Volkswirtschaft. By ADOLF WEBER. Berlin: Duncker & Humblot, 1961. Pp. 449. DM 33.60.

Adolf Weber, an octogenarian now, devotes this new volume to a restatement of the views he has expounded as a venerated teacher for sixty years. Their essence is conveyed by the first sentence of the preface in these words: "It is not difficult, with the help of the printing press and of deposit currency, to conjure up a deceptive flowering of the economy which at first is hardly distinguishable from lasting and genuine economic success." The key words in the title of the book—"appearance" and "reality"—allude to this alleged contrast between the deceptive vistas of wishful thinking and the hard though hidden truth.

The 15 chapters of this volume, largely composed of quotations from earlier writings, are essentially variations on the same theme of a threatening worldwide capital shortage veiled by inflationary boom. As a straight restatement of Weber's well-known and rather dogmatic views, the book seems mainly to be intended to demonstrate the author's sagacity and clairvoyance through his own factual interpretation as well as through the favorable testimony of others. It is probably not personal vanity but rather his deep concern about prevailing economic trends which has prompted Weber to stake out once more, and almost in the form of a testament, his claims to the role of a not sufficiently recognized defender of an equally insufficiently recognized truth.

The first and last chapter concentrate on the highly personal aspects of Weber's economic philosophy under the heading of "Economics and 'Weltanschauung'," and of his professional development in comments on "The Author and His Field of Study." The first two of the intervening 13 chapters, tracing the relationship between "Market Orientation and the National Economic Order" and between "Money and Capital," provide the analytical pattern whose implications are projected on major aspects of economic policy in the remaining chapters.

Weber's economic creed, as he himself admits, is entirely eclectic. Its basis is an intimate fusion of two so heterogeneous beliefs as those in the benevolent rule of the free market and in the necessity of governmental interference with that rule in the social interest. He stands strictly behind Adam Smith whose views he modernizes with von Thuenen's and Clark's contributions to marginal productivity theory and with the Wicksellian concept of the "natural" rate of interest; he is critical of Ricardo, opposes German historicism as well as Austrian subjectivism, and despises Keynesism. Implicitly he denies the validity of

theoretical welfare economics when he strongly asserts that our economic problems can be solved only if we "put next to our theoretical knowledge . . . the belief in a supra-natural being beyond the individual and the state" since only such a belief can create the sense of duty needed for the proper recognition of the social interest.

It is obvious that the guidance which Weber himself receives from his strong religious conscience is not very useful as a general criterion for what is, or is not, socially desirable; as a consequence, he may be readily criticized for drawing the limits of desirable governmental action too narrowly or unnecessarily wide. And it does not seem that this lack of a valid line of demarcation is sufficiently remedied by resolving doubts in favor of a standard which elevates long-range capital formation to the foremost goal. This, after all, is the essence of the present economic philosophy of the Soviets whose harsh incidence on consumers' welfare is so strongly criticized in the West. The practical failure of this method becomes apparent when Weber, carried by the combination of his high-minded social responsibility and his extreme fear of capital shortage, defines the "just wage" as "the highest possible wage reconcilable with the *lasting* increase of labor's real wage" (*italics in the text*), which, in a capital-poor country, would justify any existing wage level.

Weber's hybrid economic philosophy operates almost exclusively with the analytical tool into which he fashions the concept of capital shortage. He reasons that our understanding of this phenomenon is fundamentally marred by not distinguishing properly between the concepts of "money" and "capital"; that only genuine savings represent capital and that the increase in the money supply which typically accompanies the issuance of deposit currency leads either to open or hidden inflation; that inflation of either type unduly enhances spending and starves capital formation; and that these trends, now almost universal in the world, must soon lead to a day of reckoning. Weber insists that these views, expounded with obviously no major changes for 60 years, have stood the test of the times and are bound to assert their correctness in the years ahead; but in view of the scepticism with which the capital-shortage theory is regarded in general, his present documentation will hardly convince anyone who has not been convinced before, even if he has his own doubts about the uninterrupted continuance of present prosperity trends.

In practical application, Weber's fundamental analysis has prompted him to react to the Marshall Plan with the fear that "the flooding of West Europe with American money would tend to delay rather than to speed up the natural process of equalization which only could be accomplished by the elimination of protectionism" (p. 124), although he had insisted in 1946 that "without outside help the re-establishment of our economy is unthinkable" (p. 185); to charge the occupation regime for a good deal of the difficulties which German postwar recovery had to overcome since it "attempted to continue the most primitive forms of the national-socialistic price policy" (p. 274); to insist that in view of the increasing capital shortage "we do not only live beyond our means but also carry the processes of technological improvement and of building beyond this limit" (p. 196); to argue that attempts of the United States to increase Germany's burdens in order to relieve its own balance-of-payments

difficulties would render Germany's capital problem so grave as to invite her early economic disaster and that of the free world; and finally to deprecate the German *Wirtschaftswunder* with the argument that the admittedly great progress is largely an inflationary mirage rather than firmly established success.

Limitations of space do not permit presentation of a representative sample of the many statements of fact that could hardly stand careful scrutiny, and those referring to conditions in the United States would have to be put close to the top of such a list. It is also doubtful that his methodological assault on the validity of functional thinking in economics and his plea for a return to old-fashioned causal concepts will find much approval.

In spite of all these shortcomings, there remains, however, a definite contribution which Adolf Weber's economic philosophy and its dissemination by the spoken and written word over so many decades have meant for the teaching of economics in Germany as well as for German economic policy. It has, perhaps decisively, steered German thinking away from the limitations of all-too-rampant historicism and has favored the acceptance of the classical precepts which, no doubt, had an important role to play in the re-building of a devastated country. And since the man who is generally credited with having engineered the "German economic miracle," Ludwig Erhart, has been a member of Weber's circle, this influence may have been even greater than it appears on the record.

HANS APEL

Bridgeport, Connecticut

Price and Allocation Theory: Income and Employment Theory; Related Empirical Studies; History of Economic Thought

Capital in the American Economy, Its Formation and Financing. By SIMON KUZNETS. Princeton: Princeton University Press, for National Bureau of Economic Research, 1961. Pp. xxix, 664. \$12.00.

This long-awaited volume completes the massive NBER study of capital formation and financing in the American economy. Professor Kuznets pulls together the findings of his associates, contained in the six sector studies issued earlier,¹ examines them in the light of his own estimates of country-wide capital formation, and provides an extended commentary and interpretation of the findings. This series of volumes, and particularly Kuznets' capstone volume, have already become a *sine qua non* to those engaged in analyzing the past, present, and potential future growth of the American economy. For the voluminous data on the magnitude, distribution, and financing of capital formation, the profession will long be in debt to Kuznets and his colleagues. On the other hand, a very large number in the profession will, I suspect, take vigorous issue

¹The prior six volumes, all published by Princeton University Press for the National Bureau of Economic Research, are: *Capital Formation in Residential Real Estate: Trends and Prospects*, by Leo Goebler, D. M. Blank, and Louis Winnick (1956); *Capital in Agriculture: Its Formation and Financing since 1870*, by A. S. Tostlebe (1957); *Financial Intermediaries in the American Economy since 1900*, by R. W. Goldsmith; *Capital in Transportation, Communications and Public Utilities: Its Formation and Financing*, by Daniel Creamer, Sergic Dobrovolsky, and Israel Bovenstein (1960); and *Trends in Government Financing*, by M. A. Copeland (1961).

with the interpretation which Kuznets places upon the historical data and with the reasoning he uses to buttress his interpretation.

As a presentation of a mass of factual data, *Capital Formation* is admirably organized. After two introductory chapters, covering concepts and definitions and the difficulties of isolating long-term trends, the volume proceeds to examine the following major topics: (1) Trends in total capital formation, gross and net, and in relation to output, population and labor force; (2) the structure of capital formation, by type of capital good, by category of user (business, household, government) and by industrial sector; (3) the share of internal funds in the financing of capital formation; (4) the structure of external financing; and (5) Burns-Kuznets long swings in the major variables discussed in the prior chapters. The final two chapters present a convenient summary of findings and a brief discussion of the implications of the data for an evaluation of the future.

The major factual results (there is such a wealth of data that any selection may do an injustice to someone's particular interest) are as follows:

1. The share of gross investment in GNP, since 1870, has been steady at about 20 per cent, when measured in current prices, and has declined moderately when measured in constant prices; i.e., the relative price of capital goods has risen.

2. The share of net investment, in NNP, with both variables measured in current prices, has declined sharply, from about 15 per cent in the post Civil War decade to 7 per cent in the 1946-55 period; the share, measured in 1929 prices, has fallen somewhat less steeply, from 13 per cent to 9 per cent. As is clear from the difference in movement of gross and net investment, capital consumption allowances, as a percentage of gross investment, have risen substantially.

3. The over-all net capital-output ratio rose between the 1870's and the 1920's and then declined to the post second World War decade. Within this total there was a steady and dramatic decline of the net capital-output ratio in regulated industries (from 23.6 in 1880 to 2.5 in 1948!).

4. The decadal rate of growth in the capital stock declined steadily during the period (cycles aside). The rate of growth in capital per member of the labor force was fairly steady during major subperiods up until the late 1920's. Between 1929 and 1955, however, the rate of growth in the capital-labor ratio fell steeply. Despite this decline in the rate of growth in the capital-labor ratio, the rate of growth in output per worker did not fall off significantly, and if Department of Commerce figures on GNP are used, actually rose slightly compared to earlier periods.

5. The fall in the share of investment in NNP is almost solely due to the behavior of construction. Producers' durable equipment investment holds up quite well. The proportion of total business investment accounted for by equipment has risen sharply particularly since the 1920's. Similarly, the decline in the capital output ratio since the early 1920's seems to be mainly in the form of a lower ratio of construction to output, and not of equipment stock to output.

6. Total internal financing as a percentage of gross investment showed no

discernible trend, although it fluctuated from period to period. Considering only business investment, internal financing rose slightly. Equity financing declined erratically as a percentage of total external financing of corporations.

7. Long swings, with approximately 20 years between peaks, are discernible in population growth and in population-sensitive investment (residential construction and railroad capital formation). Other investment shows less evidence of long swings; such swings as can be isolated move out of phase with population-induced investment before the first World War and in phase after First World War.

There are a number of tantalizing questions raised, and hypotheses suggested by these phenomena. One of the most interesting questions is posed by the fact that the rate of increase in the capital-labor ratio fell sharply between the 1920's and the postwar period, while the rate of increase in output per unit of labor was not similarly affected. If we follow the lead of Solow, and the similar analyses of Kendrick and Denison, distinguishing movements along a production function—capital increases relative to labor—from shifts in the function, the Kuznets data suggest that the rate of outward expansion in the function has speeded up in recent decades; i.e., a given increase in the ratio of output to labor has been accomplished with a much smaller increase in the ratio of capital to labor. In looser terms, the place of technological advance, of improvements in the quality of the labor force, etc., have accelerated.

Further thought, however, suggests an alternative—or perhaps associated—hypothesis. As Solow has stressed, advances in technology and general knowledge are incorporated into the production process largely through investment in capital goods. The increasing importance of short-lived producers' equipment relative to long-lived plant in the business capital stock, implies a faster turnover of capital stock. Given some rate of advance in "best practice" technology and organization, the rising share of producers equipment has led to a decline in the average age of the capital stock and to a speedup in the average rate of replacement. In turn, other things being equal, this implies a faster rate of adoption of new technology, and finally a larger rate of increase in output per man-hour, per unit increase in the net capital-labor ratio. Thus the fact that the rate of increase in output per worker has remained roughly constant while the rate of gain in net capital stock per worker has fallen sharply, may be explained both by a more rapid advance in the technological frontier and by a more rapid rate of adoption of new technology. These kinds of considerations lead to the tentative conclusion that the stability of the gross investment share of GNP may be more significant than the decline in the net investment share which Kuznets tends to emphasize.

There is one major theme which runs throughout *Capital Formation*, namely, that the share, and changes in the share, of investment in total output are to be explained mainly from the supply side. In other words, the supply of saving rather than the demand for capital has been the major determinant of investment behavior. According to Kuznets, the major puzzle to be explained is why, "... if real product per capita grew 20 per cent per decade, the long term net national saving rate was below 15 per cent; why it declined instead of rising; and why the share of gross capital formation in gross national product barely ex-

ceeded 20 per cent and at best showed only a very slight rise, even for current prices volumes." His own answer is that the essential restraint on capital formation has been a limitation of the supply of saving rather than of the demand for capital, and hence it is the former which primarily needs to be explained in order to understand the growth process. This idea permeates Kuznets' discussion of the historical data, and provides the major thesis for his final chapter which looks into the future. The following, rather lengthy, quotations give the spirit of this interpretation.

But granting the usefulness of these hypotheses, one may still doubt that technological factors are dominant in determining the long-term trends in *nationwide* capital formation, or nationwide capital-output ratios if by technology we mean inventions and improvements associated with the stock of engineering and other knowledge. For economic and other considerations—changing pressures and forms of organization—exercise a major influence on the trends as well as on the levels of the capital-output ratios. Repeatedly in the past, great improvements have been effected in utilization of capital under conditions in which the technological framework has remained unchanged—as in the United States during the 1930's. In the course of its long-term economic growth, a nation can choose between high and low capital-output industries, and its choice will be made in the light of availabilities of resources for capital formation, that is, largely in terms of the costs of withdrawing them from current consumption. With such a choice, and the changing conditions that affect it, long-term trends in nationwide capital-output ratios may well reflect trends in the supply of savings much more than trends in capital presumably required technologically by some pattern of relations between specific baskets of final products and capital indispensable for producing them. (Pp. 89, 90.)

In particular, when we consider the large stock of new knowledge awaiting productive exploitation and the wide investment opportunities abroad that presumably existed throughout most of the period under discussion, it is difficult to assume that the level of capital formation and the factors behind the stability of the gross capital formation proportion and the decline of the net capital formation proportion are the results of long-run limitations upon the supply of capital investment opportunities.

The alternative approach, which emphasizes the supply of savings, seems more plausible and more fruitful as an analytical lead. Given the limited relative contributions to nationwide savings that, under our institutional conditions, could be made by corporations (in the form of undistributed profits) and by governments, the main question suggested by this approach is why the ultimate consumers in our rapidly growing economy managed to save only a small proportion of their income (at best slightly over 10 percent), and a proportion which, on a net basis, declined rather than rose, despite rising real income per capita. (Pp. 397-98.)

As Kuznets himself points out, the analysis of the *ex post* investment share must proceed, like any demand and supply analysis, by considering both blades of the Marshallian scissors. The only meaningful way, therefore, of interpreting the conclusion that the supply of savings, and not the demand for capital, was the major determinant of capital formation, is that the demand

for capital is highly elastic with respect to the interest cost of obtaining it, while the supply of saving is quite inelastic with respect to the interest rate. But Kuznets' analysis does not, fundamentally, establish this conclusion.

In general, Kuznets' argument seems to run as follows: If we think of technology as specifying a fixed relationship between capital and output, then technological considerations are not sufficient to determine the country-wide demand for capital. Purely technological constraints are clear only if we deal with single products, and even here wide variation in capital-output ratios are possible. And when we deal with a variety of products, the divergence between some minimum capital-output ratio and the one actually realized becomes even larger, because if capital funds are readily available the economy will emphasize the more capital-intensive industries and vice-versa. In essence this line of reasoning says that there are many economic aspects to capital formation in addition to the engineering facts of the production function, and that we must look at the supply of saving to pick up these economic considerations.

There are a host of problems in this approach. In the first place the *demand* for capital involves far more than engineering considerations. If we think of technology as specifying the parameters of the production function, then the specific choice of capital-labor ratios, and hence of capital-output ratios will depend upon the marginal rate of substitutability specified by the parameters, upon the relative prices of capital goods compared to the price of labor and of output, and finally upon the cost of obtaining funds. As technology advances, the marginal and average product of capital curves shift out, and further substitution of capital for labor may occur, depending on the magnitude and slanting of the shifts. With this framework in mind there are a number of developments which might have encouraged a decline in the capital-output ratio, and a reduction in the rate of increase in the capital-labor ratio in recent decades. Each of these developments operates upon the demand for rather than the supply of capital.

1. Prices of capital goods have risen relative to the over-all GNP deflator. The price of capital has thus fallen less, relative to the real wage rate, than would have been the case had relative prices of capital goods stayed unchanged. In Harrodian terms, technological progress has not been neutral, because, apparently, innovations have not proceeded as rapidly in the capital-goods producing industries as they have in the capital-goods using industries. As a consequence there has been a rise in relative prices of capital goods, and at the same interest rate, a fall in the capital-output ratio (capital and output both being deflated by their own prices).

2. The large rise in corporate profits taxes since the 1920's has raised the before-tax yield needed to achieve a given after-tax yield. For any given rate of technological advance, and a given interest rate (or a given minimum reservation yield) this should lead to a slower rate of substitution of capital for labor and a fall in the capital-output ratio relative to what would otherwise have been the case.

3. The shift between long-lived construction and short-lived producers

equipment—*ceteris paribus*—might be expected to lower the net capital-output ratio.² Similarly the dramatic fall in the capital-output ratio in the regulated industries from the late 19th century when there was substantial building ahead of demand, could be cited as a reason for the over-all decline in the capital-output ratio. Both of these might seem, at first, to be factors on the demand for capital side. Kuznets, however, points out that such changes need not be accepted as evidence that demand factors were the important determinant. In the first place, the *ex post* developments noted above may have themselves stemmed from a shortage of saving. In so far as they did not, they may simply have freed capital for use elsewhere. In particular, Kuznets stresses the availability of saving as a factor in determining product-mix; i.e., a plentiful supply of saving encourages the output of capital-intensive industries and vice versa. The mechanism presumably works through a Ricardo-Hayek type of response, in which changes in relative factor prices lead to changes in relative product prices, and thereby encourage substitution in the product market. The nationwide elasticity of substitution of capital for labor, in other words, depends not only on the elasticities implied by individual production functions, but also on the cross-elasticities of demand among various products. Theoretically, it is indeed possible that the developments referred to above are not independent explanations of the decline in the capital-output ratio and in the investment share. However, it is difficult to imagine that movements of such a magnitude were themselves caused by changes in savings schedules. Indeed, if such major developments had been caused by factors operating on the supply-of-funds side, we should have observed a sharp rise in the interest rate; as a matter of fact "riskless" interest rates have declined. Conversely, to the extent that such developments were not caused by changes on the supply-of-funds side, but represented shifts in demand schedules, they freed capital for use elsewhere. Kuznets' argument implies that, had saving propensities remained unchanged, such capital would have been used to maintain the over-all investment-share and capital-output ratio, especially via its encouragement of capital-intensive industries. However, in view both of the relative magnitudes involved, and of the relatively modest proportion of total price accounted for by actual (and imputed) interest costs, his argument implies the existence of a number of capital-intensive industries with extremely high long-run price elasticities of demand. It is impossible to state that he is wrong about this. I would suggest, however, that the burden he has placed upon relative elasticities is probably greater than they can sustain.

I do not mean to imply that the above explanations are necessarily the

² As a matter of fact, the relative increase in the price of construction relative to the price of capital goods is one possible reason for the shift from construction outlays to equipment outlays. In turn these relative price movements may be explained by the failure of productivity in construction to rise along with productivity in the equipment industry. While these are factors which reflect change in supply conditions in the capital-goods industries, they are not associated with the *supply of saving*. In setting up a demand schedule for *saving*, these factors are included on the demand blade of the scissors.

only ones, or even the correct ones, for the fall in the investment share and in the capital-output ratio. But they do illustrate the fact that one cannot set up a simple dichotomy between "technological" and "economic" considerations, and assimilate all of the latter under the heading of the supply of saving.

In his interpretation of the level and movement in capital formation, Kuznets comes face to face with the fact that "riskless" interest rates have declined during the period in question. How explain this, while at the same time maintaining that it was a decline in *ex ante* saving which brought about the decline in the net investment share? According to Kuznets, "like all prices they [i.e., interest rates] measure only the *relative* pressure of demand upon supply." Hence the decline in interest rates "means simply that the shortage of the supply of saving relative to investment opportunities has become less acute. Or to put it differently: with the economic growth of the country and the increased supply of goods per capita, would-be savers give a relatively lower preference to present supply than to future supply." This is indeed a most intriguing theory of prices. I had always been under the impression that the excess of demand over supply determined the direction and rate of change in prices, and that a decline in excess demand to some lower, but still positive, amount would slow up the rate of change, but certainly not lead to a price decline. As a matter of fact, if the (relatively inelastic) supply schedule of saving has shifted out to the right, as the prior quotation implies, and if there has been a decline in interest rates, and finally if this has been accompanied by a *reduction* in the *ex post* share of investment and saving, the conclusion which seems forced upon us is that the demand for capital has shifted down substantially (and/or, as noted above, the imposition of a sizeable corporate profits tax has had the equivalent effect of a large rise in the interest rate at all points on the supply-of-funds schedule). Moreover, even if we should accept Professor Kuznets' theory of prices, and agree to consider the decline in interest rates as only a reflection of a fall in the *excess* demand for capital goods, how do we reconcile a shift out to the right in the savings schedule with an *ex post* decline in the investment share? Excess demand implies an unsatisfied demand; if demand has been unsatisfied, should not a shift to the right in the savings schedule lead to larger *ex post* investment? Finally, if, averaging out the cycle, *ex ante* investment exceeded *ex ante* saving throughout the period, but the amount of the excess declined in the latter part of the period, how do we explain the contrast between the secular price decline of the last part of the 19th century and the secular price rise of the 20th century to date?

As a matter of fact, the savings schedule has *not* shifted out to the right; indeed its leftward shift forms the main burden of Kuznets' argument in other parts of the book. Personal savings, as Professor Kuznets points out, constitutes the bulk of the net saving total. Although the proportion of disposable income saved does not appear to have declined very significantly over the last seven or eight decades, and indeed the same proportion may now be forthcoming at lower interest rates, the share of disposable income in total income has fallen

noticeably since the 1920's, chiefly due to the increase in the level of taxation. Similar developments have occurred with respect to net corporate saving. Hence the over-all saving schedule has probably shifted to the left. But again, to reconcile this with a fall—or even stability—in the interest rate requires that we postulate a decline in the demand schedule for capital goods.

Kuznets may be correct that the fundamental limitation on capital formation has been the supply of saving. The accompanying implication of a very high elasticity of the demand-for-capital schedule in terms of the cost of obtaining funds may also be a correct one. As Kuznets himself states, in a number of places, *ex post* data on shares and ratios cannot “prove” the case one way or the other. However, in the judgment of this reviewer, the arguments which are advanced in *Capital Formation* for the primacy of the supply of saving in determining the historical trends in investment are not convincing.

In the final chapter, Kuznets examines the historical evidence in the context of the light it casts on possible future developments. In keeping with his major theme, he expects a continued excess of *ex ante* investment demand over *ex ante* saving. According to Kuznets, ours is an economy, “in which the recently increasing diversion of product to current consumption by governments, combined with high levels of consumer demand, has limited capital formation and savings proportions and brought about, under conditions of full employment, rising price levels which have persisted even through the 1958 recession.” Extrapolation of inflationary pressures over the next thirty years “raises a specter of intolerable consequences, making the policy solutions adopted critically important. . . .”

Those who share Kuznets' vision of the savings-investment process will doubtless find much with which to agree in this preview of the future. On the other hand, many, among whom this reviewer is to be counted, will not accept this interpretation of the past, or this prevision of the future, even when accompanied by the impressive marshalling of data which features *Capital Formation*. While the past five years are a short period indeed, in the sweep of time covered by the Kuznets volume, the events of those years certainly do not lend support to the picture of chronically exhilarated economy. The events of the postwar period, even including the last five years, have not justified the Keynes-Hansen fear of persistent secular stagnation; neither, however, do they warrant an acceptance of its converse, secular-demand inflation.

Capital Formation is an important work. Precisely because it is so monumental in scope, we have had to concentrate on a few central points. Since this reviewer disagrees with those points, the major part of the review has been critical. In the space allotted, it cannot do justice to the literally scores of cases in which *Capital Formation* provides significant and illuminating insights into one aspect or another of the capital formation process. The consequent imbalance of the review should not obscure the major contribution to economic knowledge which Kuznets and his colleagues have accomplished.

CHARLES L. SCHULTZE

University of Maryland

Decision Order and Time in Human Affairs. By G. L. S. SHACKLE. Cambridge: Cambridge University Press, 1961. Pp. xiv, 302. \$6.50.

In this book Professor Shackle, the founder and managing director of the "focus element" school of expectational economics, presents a report on the present state of development of that enterprise.

He performs this task by a careful and systematic restatement and elaboration of his basic concepts (as previously developed in *Expectation in Economics*, *Uncertainty in Economics*, and a variety of journal articles) and by a presentation and evaluation of various points raised by reviewers and critics of the previous writings. As usual, Shackle states his case with great lucidity, elegance, and persuasiveness; and he appraises the views of his various critics and friends with accuracy, generosity, and courtesy.

The following, in over-simplified form, are Shackle's major propositions.

1. A decision-maker, in contemplating the variety of possible outcomes of a prospective act, tends to array them on a line according to the degree of "gain" or "loss" that a particular outcome represents as compared to the present "viewpoint" situation. He uses this one-dimensional view of outcomes to introduce order and simplicity in what otherwise would be a complicated and confusing prospect.

2. To each point along the satisfaction-line the decision-maker assigns a degree of "potential surprise," reflecting the extent to which he would be surprised by the occurrence of the indicated gain or loss consequent upon his action. Potential surprise ranges from zero (when the outcome is "perfectly possible") to a value \bar{y} , denoting maximum surprise (when the outcome is considered totally impossible). Potential surprise is not a distributional variable, i.e., its metric is not like that of a probability measure. The potential surprise values of the various outcomes do not need to sum to one or to any other constant; and there is no limit to the range of outcomes that can have zero, maximum, or intermediate values. In the general case, potential surprise is zero for a range of gains and losses adjacent to the "viewpoint" state of affairs, and then, in approaching the positive and negative extremes, rises to the maximum, \bar{y} .

3. In viewing the range of logically possible outcomes of a given act, the decision-maker does not pay equal attention to all of them, as he would when applying a probability scheme to his decision. The power of a potential outcome to attract his attention varies directly with its positive or negative distance from the "viewpoint" and inversely with the potential surprise attaching to it. Two points of maximum attention-focusing power (called "focus elements") emerge: an extreme positive outcome and an extreme negative one. Both of these focus elements are somewhat beyond the range of "perfectly possible" outcomes. They occur at a point where potential surprise is already on the upgrade but has not yet risen as high as to make the outcome appear fanciful and unreal.

4. When preparing to chose from among a set of possible actions, the decision-maker considers only the focus gain and focus loss attaching to each of the acts. He refers each of these pairs to a two-dimensional "gambler's indifference map" (on which focus gains and focus losses are the two dimensions) and adopts that action whose pair of focus elements ranks highest with respect to his particular indifference curves.

Shackle's detailed discussion demonstrates that, in recent years, this concep-

tual structure has grown from a few seed-corn ideas into an academically respectable system of thought, complete with sets of axioms, a calculus of reasoning, and its own geometry. It has weathered the test of searching examination and criticism, and has evolved into an aesthetically pleasing, logically consistent, and well-elaborated system. Furthermore, it has been well grounded in a suitable philosophy of the historical process, in which decision is seen as the locus of continuing creation in the unfolding of history.

Shackle's concept of decision is such an interesting and well-prepared pudding that one would very much like to see it proved in the eating. This proof has not yet been provided; and Shackle perhaps does his own cause an injustice by appearing to be not very much interested in such mundane considerations. By eating we mean here some effective *use* of the concept either as a guide to *empirical research* on the decision process or as a foundation for *normative prescription*.

Concerning the use of the concept in psychological research, it ought to be possible to construct experiments in which the experimenter somehow manipulates the desirabilities and credibilities, in the subject's view, of various outcomes of his actions, with a view to discovering the existence and location of focus-outcomes and their effect on behavior. This reviewer attaches zero potential surprise, though only medium probability, to two results of such experimentation: first, the vindication of Shackle's framework, and second, the discovery that the framework needs to be enlarged by a theory of learning in order to attain maximum usefulness.

Pending the design and execution of such experiments, however, Shackle or one of his followers might usefully survey the already existing literature in psychology on the subjects of perception, learning, and motivation, and then test their concept of decision-making for consistency with this body of empirical knowledge.

It is also perfectly possible that Shackle's framework might yield prescriptions for decision-making. (Shackle himself would probably deny this, since, in his view, decision-makers already conform to his model.) Decision-makers who attempt to apply statistical probability theory or game theory in actual decision-situations quickly discover that this is a complex, costly, and time-consuming undertaking. It would be a great boon if a simplified scheme such as Shackle's could be demonstrated to perform quite satisfactorily as a substitute. Here, too, one can conceive of some interesting experiments for testing the adequacy of various decision-formulating schemes in various decision-requiring environments. Focus elements might well emerge as an entirely satisfactory scheme, especially if they are placed in some kind of Bayesian process for their reformulation on the basis of experience.

SIDNEY SCHOEFFLER

University of Massachusetts

The Measurement of Social Welfare. By JEROME ROTHENBERG. Englewood Cliffs, N. J.: Prentice-Hall, 1961. Pp. xii, 357. \$7.95.

Practical men or men in authority, lured to this book by its promise on the title page of "a new and constructive approach to welfare economics as a prac-

tical aid to social planning" will be disappointed; but academic scribblers, looking for a detailed, careful and critical survey of the more abstract aspects of recent controversies over "utility and all that" will be rewarded. Part I sets out the basic problems: how can we formulate a Social Welfare Function (SWF) which (1) is internally consistent, (2) enables us to compare a large number of the possible policies and (3) corresponds to the values prevalent in society. These criteria of *consistency*, *power* and *relevance* are the basis of Rothenberg's judgment of SWFs. He discusses Bergson's and Arrow's approaches to social choice and argues that Arrow's SWF includes the Bergson Economic Welfare Function. (Though possibly irrelevant, it would be most interesting to have Bergson's view on this.) He explains clearly and examines critically Arrow's conclusion that the acceptance of individual values leads to an inconsistent standard. Much of the rest of the book is devoted to an attempt to by-pass this conclusion, and in particular to remove the condition of the Independence of Irrelevant Alternatives. Parts II-IV examine various formulations of criteria of social choice, including (a) the compensation principle, which claims to get along without distributional judgments, (b) "mixed approaches," which contain pronouncements on both production and distribution, and (c) cardinal analysis, which may help to overcome such contradictions as the paradox of voting by the use of measures of the intensities of preferences, and may thus enable us to aggregate individual values. Part V turns to a discussion of requirement (3), viz., the relevance of welfare criteria to the prevailing social values. Rothenberg argues that it may be easier to make empirical generalizations about the community's desired decision-making processes than about either interpersonal comparisons or social orderings (though easier to generalize about the former than the latter) and that consensus on decision-making processes may be sufficient for the construction of a SWF. The ultimate chapter, containing his constructive proposals, is exceedingly sketchy. It says, in short, that individual values, decisions about procedures and social institutions are not isolated but interdependent and mutually reinforcing. Although Rothenberg's presentation is obscured by heavy sociological jargon, a translation would, as far as I can see, run like this: we want certain things, but, cooperating with (?) and being opposed by others, we not only accept certain rules, but incorporate some of the values of others and their acceptance of the rules into our system of values. This system is not "given," but is modified by our learning from and getting fun out of cooperating. The rules about how common decisions are to be made are expressed in democratic institutions. From this it is somehow concluded that the decision-taking process is identical with the SWF. The transition from this process being part of the SWF to its being identified with it is not entirely clear. In any case, the customary means-ends dichotomy loses its force.

Nor is it clear why so much stress is laid upon consensus on the method of choosing an "official" SWF. It may be part of the prevailing values that conflict and struggle are desirable, possibly a condition of life, and should not be "resolved." Whence the value judgment that value judgments *ought to be* capable of being aggregated (even assuming that they *are*?). Further, it may be more fruitful to formulate SWFs for groups in society rather than for so-

ciety at large: SWFs for farmers, workers, professionals, suburbanites, the Liberal Party or small shopkeepers are more promising than a SWF for humanity (for why stop at the nation?). Rothenberg's own digression on family choice would suggest that only groups with strong solidarity are eligible. The power and relevance of economists' advice would be strengthened if their recommendations were based on such particular SWFs: they could even set up as welfare consultants with brass plates.

Although deep in the Anglo-Saxon tradition on these questions, Rothenberg does not appear to be fully aware of the revolutionary break with traditional welfare economics which his repeated plea for usability and applicability and his constructive proposals imply. Take only the traditional separation of "given" ends from neutral means. Rothenberg knows that it meets with at least four difficulties: (1) Ends are shaped, or at least partly influenced, by our opinions about means, and our views about means depend upon what ends other people and we pursue. (2) People do not know clearly their ends and attempts to clear up ambiguities and to remove ignorance must alter the ends. (3) If ends are based on false beliefs about means, fuller information will change the ends, but not in a logically determinable manner. (4) Not only do ends often turn out to be means, but means often take on the quality of ends.

But these crucial issues are treated in footnotes and asides (e.g., fn. p. 5, fn. p. 328, p. 329), while long chapters are devoted to types of analysis which are destroyed by such recognition.

Similarly, the basic criticism of consumers' sovereignty is not concerned with the "psychological needs of the organism" (p. 323), but with the fundamental problem raised by the March Hare: "You might just as well say that 'I like what I get' is the same thing as 'I get what I like'" (*Alice's Adventures in Wonderland*, p. 98). A system cannot be judged by the standards which it creates.

This lack of integration of, on the one hand, the insight of the last chapter and the pleas for applicability and relevance and, on the other hand, the traditional views is evident in several places. Thus Rothenberg attempts, rightly, to overcome the impossibility of welfare comparisons if changes in taste occur. But his method fails because it is based on a falsely rationalistic view of human personality, discordant with Chapter 13. If a person with incomplete knowledge and experience chooses in one way, and, with fuller knowledge and wider experience chooses differently, and if the latter choice could be *logically deduced* from the preferences revealed by the former, and thus an unambiguous preference scale be constructed, certain types of "changes in tastes" could be incorporated in a rigorous welfare economics. But the required process is not one of logical deduction but of psychological interpretation. Unambiguous welfare conclusions are impossible without a much fuller theory of human personality and, analogously, of the "personality" of groups. This argument reinforces the use of "particular" SWFs (though mere consultants may not have the required empathy).

Similarly, Rothenberg's argument that the distinction between "tastes" and "values" coincides with that between absence and presence of external consumption effects is convincing, as far as it goes, but it does not go far enough

in the light of his own proposals. There can be no unique ordering of an individual's preferences, for the reason that one ordering (say, that expressed in impulsive market choices) may be subject to self-criticism (possibly expressed in cool market choices) which in turn may be exposed to self-criticism (perhaps expressed in voting) and that any ordering, expressed in any way, may be subject to self-criticism in the light of higher standards, which standards themselves can be criticized. Interdependence then may take the form not simply of A's satisfactions depending upon B's consumption, but also of A's standards of criticism ("values") depending upon B's standards. A healthy society consists of critical and self-critical citizens who attempt to clarify and criticize their values in the light of the—similarly self-criticized—standards of others. Chapter 13 seems to point towards such an interpretation of Rousseau's General Will and the Quakers' sense of the meeting, which is neither mystical nor indeterminate. But nothing of this is reflected in the earlier Appendix on "Welfare Comparisons and Changes in Tastes."

Of the numerous issues Rothenberg raises in his stimulating appraisal, only one or two can be taken up. He says (correctly) that relative distribution cannot be measured on a diagram showing utility possibility curves (p.64). But all that is needed are value judgments on different distributions. A curve can be drawn linking distributions which are deemed to be equally good on distributional grounds. Assuming the independence of utility-possibility (u) and "equally-good-distribution" (d) curves (an unwarranted assumption), a social indifference curve between points showing different u - d combinations can be constructed.

In his evaluation of the compensation principle Rothenberg argues that even if the separation of production from distribution were possible, it would not be useful (p. 102). Again, this is surely not so. It would be most useful if aspects of production could be separated from aspects of distribution, even though no categorical recommendations could be made unless the two aspects were combined. Hypothetical recommendations based on expert knowledge are not useless. To reject them is to reject the division of labor and, more particularly, the economist's function of helping people to think clearly about what is involved in their choices. The social indifference curves suggested in the previous paragraph between different u - d combinations need not (perhaps should not) reflect unanimously accepted group values. The area of conflict would be clarified (not eliminated) if we knew whether we objected to a policy because it reduces utility-possibilities more than it improves distribution, or because it worsens distribution more than it increases utility-possibilities.

Rothenberg's treatment of these problems suffers from ignoring Little's second edition published in 1957. He also pays relatively little attention to foreign contributions to the literature. Myrdal, whose cumulative process, adapted from Wicksell to sociology, is described on page 315, whose approach has certain features in common with Rothenberg's, and whose *American Dilemma* demonstrates how a "powerful" and "relevant" SWF can be used, is not even mentioned in the 16-page bibliography. (I hope that the omission of my own "Programmes and Prognoses," *Quart. Jour. Econ.*, Aug. 1954, and of my article in *Économie Appliquée*, Oct.-Dec. 1952, which, very inadequately and

partly fallaciously, points in the same direction as Franklin M. Fisher's analysis discussed in Chapter 5, has not prejudiced me towards overemphasizing other omissions.)

While reading the full and subtle discussion of cardinal analysis and the various attempts to measure utility, I asked myself why, instead of Preference Thresholds and Expected Utility, the following simple method could not be adopted: Put before an individual the following hypothetical question: you can have \$1,000 in year 1 and \$100 in year 2. If you were given an extra \$1 in year 2, how much would have to be taken away from you in year 1 in order to make you no better and no worse off in the two years combined? If the answer is, say \$20, we have established that the utility of, say, one "util" is derived from \$1 when income is \$100, and from \$20 when it is \$1,000. We would have to specify that income must not be stored in any form but must be spent and consumed during the year. Uncertainty and time preference must be eliminated by asking the individual to abstract from them. His obedience is verified if we get the same answer when the sequence of the two years is reversed.

PAUL STREETEN

*Balliol College
Oxford*

Produktivitet och räntabilitet. Studier i kapitalets betydelse inom svenskt näringsliv. (Productivity and Profitability. Studies of the Role of Capital in the Swedish Economy.) By ERIK LUNDBERG. Stockholm: Norstedt, 1961. Pp. 286.

During some fifteen years in the 'thirties and 'forties, a steel mill belonging to a large Swedish company was left to operate without any new capital investment or technological change. Maintenance and replacement were kept at a minimum. Output per man-hour in this plant at Horndal rose by almost 2 per cent per annum. In other plants, significant investment projects were carried out, and output per man-hour in the company as a whole rose by almost 4 per cent a year.

The "Horndal effect" provides a concrete illustration of at least part of the problem of "pure" productivity increases, residual to conventionally measured inputs of capital. On this area, much effort is now converging, and Erik Lundberg's new book contains a discussion of it. According to his findings, output per man-hour in Swedish manufacturing industry rose by 2.2 per cent per annum in 1946-57. About 45 per cent of this increase is attributable to increased capital intensity, and the remainder, or approximately 1 per cent per annum, should represent pure productivity increase. This is a slightly lower rate of "technical progress" than that found in American series which show a rate closer to 2 per cent for recent years and suggest that over the last half-century close to 90 per cent of the increase in output per man-hour has been due to other factors than increased capital intensity in the ordinary sense.

"Productivity" is one of the themes of this book, but the statistical measurement of productivity is impossible without estimates of capital stock and without a good deal of capital theory, implicit or explicit. As Lundberg says,

"in all economic thought there is probably no concept more confusing, more nebulous and obscure, more complex, more variously understood by economists through the ages, than the concept of capital." All economists with any interest in empiricism face the conceptual problems of capital theory, and all move on, as they must, to construct models as if it were clear what capital really is and to employ statistics as if they really measured it. Lundberg does too in the end, but only after an unusually searching enumeration of the intellectual difficulties that it involves and after asserting that the value of capital stock simply cannot be unambiguously defined except in a static context where the future is predictable without uncertainty. As for the use of production functions, his own assumption, based on interviews with industrialists and technicians, is that suboptimal disequilibrium in regard to technology and the utilization of existing capital stock is a profoundly important aspect of the situation at any time, and that the dynamics of capital accumulation can only be understood in terms of such disequilibria and the profit opportunities they imply.

A second theme is "profitability" which is discussed on the basis of a questionnaire and interview study of investment planning in Swedish industry. In a large number of firms, even very sizable investment projects were evidently carried out without any estimates of rates of return or even payoff periods. Office buildings, workers' housing, inventory increases—such investments simply do not lend themselves readily to the application of precise criteria. In the introduction of new equipment, smaller firms may be entirely justified in imitating successful competitors, and even large enterprises may on the same grounds adopt products and processes launched abroad. Where systematic criteria were employed, however, the general impression was much like that familiar from a number of American studies: payoff periods were expected to be less than five years, rates of return (before tax) of 20-40 per cent were usually required. But the range in these expected rates of return was extremely wide—from 3 to 70 per cent—and, moreover, *realized* rates of return were very much lower than anticipated ones.

Lundberg asks why this should be so, and his answer puts particular stress on the many kinds of interdependence which inevitably mar attempts to anticipate returns to individual investment projects. The profitability of new equipment depends on the existence of complementary plant facilities, possible bottlenecks and disequilibria, etc., and cannot be compared with anticipated returns on long-range expansion projects. (Nor do they seem to be thus compared by managers who do not neglect long-run projects with lower anticipated returns in favor of more profitable short-run expansion of a piecemeal character.) Long-run plans for expansion will be affected by expectations of external economies arising from growth in other industries and in the public sector. And *ex post*, the interdependence among competitors, both in product and factor markets, will depress returns below those expected at the time of investment and deflect the benefits of capital accumulation toward consumers and labor.

But, no matter how the contribution of capital is measured, that contribution will depend on the allocation of scarce capital among competing investment opportunities. In the third part of his book, Lundberg raises the question

of how efficiently the markets for capital and credit actually perform this function. The principal task of the Swedish credit market is to transfer surplus liquidity from other sectors to the government and the housing sector which together absorb about three-quarters of the loanable funds. This can hardly be described as even an approximation to a perfect market. The stock market is narrow, the bond market often strictly controlled, and corporate investment very largely self-financed for a variety of well-known reasons. In such a compartmentalized market, the mobility of capital is bound to suffer, and in the field of policy Lundberg makes a plea for measures that would restore mobility to this factor, just as in Sweden much effort has been devoted to the stimulation of mobility in the labor market. Tentatively and provocatively he advocates a policy of low taxes and high interest rates that would reduce at least some of the barriers that presently impede the flow of savings from finding optimal uses.

Although this book is partly based on Swedish materials and is addressed to a Swedish audience, Lundberg's assessment of the state of economic thought on capital and growth is of general interest. "Technical progress" is often built into exponential terms in a production function but Lundberg set out to investigate the way in which productivity increases emerge in the individual cells of the economy and to build bridges between the ideas of business men and managerial economists on the one hand and macroeconomics on the other, between traditional capital theory and recent growth models. Skepticism is the hallmark of his discussion of macroeconomics, its models and statistics. Between the esoteric realm of capital theory and empirical estimates or policy recommendations there lies a "sea of troubles," and Lundberg misses no opportunity of stressing the wretched fragility of the conceptual floats on which we paddle across those metaphysical depths. But, as he characteristically remarks, a proposition may be interesting without being true, and no one could be more sensitive to the urgent demand for answers to impossible questions. There remains nevertheless a tension between the desire for intellectual clarity and the sense of relevance and responsibility, and it is this tension that stamps and enhances Lundberg's writing. A contribution that sweeps with such lucidity and ease from the basic premises of economic analysis to the exigencies of policy belongs in the greatest tradition of economic thought.

GORAN OHLIN

Columbia University

Household Saving and the Price Level. By STEN THORE. Stockholm: National Institute of Economic Research; Almqvist & Wiksell, distributor, 1961. Pp. 91. SKr. 30.

The central proposition upon which this volume is based is that prices have too long been neglected in the theoretical and empirical analysis of household behavior. The author proposes to reinstate the price level as an explicit determinant of consumer demand and savings, with his own interest particularly concerned with the latter. The series of multiple linear regression models which are the core of the book are designed to determine the magnitude of price effects on saving.

The introduction points out that, since the advent of Keynesian consumption and savings functions, emphasis has been almost exclusively on the income effect, with prices disregarded in cross-section analysis and eliminated in time series by what is termed the "deceptive device" of deflation. The author returns to the neo-classical theory of demand of Marshall, Pigou and others of the Cambridge School in which both price and income effects are explicitly considered. One of his chief aims is the development of a dynamic price theory which can be used to determine the effect of continuous inflation, such as occurred in postwar Sweden, upon household saving. At the end of the volume he concludes that the application of his models to Swedish data on savings indicates that a 3 per cent annual increase in the price level of consumer goods would decrease average household saving by at least 9 per cent per year (p. 240).

The seven chapters of the book contain a series of progressively more complicated regression models. The procedure in each case is to define a consumer preference index for the individual household, develop a statistical probability or regression model and test the model by applying it to data on savings, largely from Swedish surveys in the 1950's. The simplest model (Ch. 1) is a one-period model including consumer prices, planned consumption expenditure, planned holding of bank money, expected disposable income and initial holdings of bank money. Saving is defined as bank money and/or shares of stock and does not usually include durable goods. The succession of models which follow provide not only an interesting exercise in model building for the student of regression analysis, but some critical appraisal of their application. There are lagged models; models in which expected income (the Lindahl "subjective" income) and future prices enter; intratemporal and cross-section models; and many more.

The material in two of the chapters seems especially relevant to current research in the area of consumer expenditures and savings. Chapter 3 contains a discussion of the learning process with reference to Katona's theory of habit formation, the Duesenberry demonstration and past income effects, the application of feed back to learning and the irreversibility of demand curves which may result from the learning process. This leads to the inference that identical consumer preference schedules cannot be assumed in cross-section studies and that cross-section models may, therefore, contain a "lack of specification" and produce misleading results. Can the introduction of demographic, psychological and other non-economic variables help? Thore poses this question, but seems, on the whole, to favor the view that economists should limit themselves to the analysis of "financial" variables, partly on the grounds that survey samples are seldom sufficiently large to permit the requisite breakdowns and partly because the use of such variables appears to him to lead merely to disaggregation of the Keynesian consumption function.

This view runs somewhat counter to the recent tendency, at least in the United States, to analyze consumer expenditures and savings in terms of many variables, some of them non-economic, and to the concern with interaction among such variables, which cannot be satisfactorily dealt with by the usual multiple linear regression models. It is interesting that Thore encountered a case of such interaction, between income and wealth, in the application of his re-

gression model (presented in 2.6, p. 66) to the Swedish 1957 savings data, but interaction does not appear to impress him as a significant general problem.

In Chapter 5 the permanent income hypothesis and the Keynesian consumption function are dealt with in great detail. It is demonstrated here that Friedman's formulation of permanent income (in which the M.P.C. of transitory income is assumed to be 0) is a special case of a more general multiple regression model with respect to permanent and transitory income. Thore joins with other critics who regard this assumption as unrealistic.

It is hardly possible within the confines of a brief review to deal with the many theoretical, statistical and empirical points covered within the volume. This book requires study. It should serve as a useful reference book for graduate and other students of household behavior and regression analysis. In addition to the nontechnical introduction and conclusion, and the main text, the book includes a statistical appendix on regression models and a substantial bibliography.

As a final comment, this reviewer would like to express some skepticism as to whether the assumptions of multiple linear regression analysis in its present form provide the most satisfactory tool for the analysis of household behavior. Nor does it seem possible to analyze effectively the determinants of consumption and savings without taking account of a number of variables, including many noneconomic ones, and their areas of interaction.

ELIZABETH W. GILBOY

Harvard University

Investment and Growth Policies in British Industrial Firms. By TIBOR BARNA.

New York: Cambridge University Press, 1962. Pp. viii, 71.

Post-War Investment, Location and Size of Plant. By P. SARGANT FLORENCE.

New York: Cambridge University Press, 1962. Pp. viii, 51. \$2.50.

These two monographs are products of the British National Institute of Economic and Social Research prepared by Mr. Barna of the Institute and Professor Florence of Birmingham University. Barna's monograph lends itself to a more extended review than Florence's purely statistical monograph.

Barna's monograph not only gives insights into the slow yet stable growth of the postwar British economy but also contains much that is instructive for the growth policies of the American economy in general and American industries in particular. On the basis of comparative investigations of two representative groups of British industries (i.e., "growing" electrical engineering and "stable" food processing), Barna draws interesting inferences regarding private investment decisions, and also makes suggestive generalizations respecting policy desiderata.

It is instructive that private investment decisions so relevant to Britain's (and other market economies') stable growth have been favorably influenced by her public policy of maintaining "a high and stable level of employment" and by increased competition (due to removal of wartime controls, antimonopoly legislation, and liberalized imports). Yet Barna candidly admits the continued existence of "a vicious circle of restricted growth, weak balance of payments and inflation," and also implies the preferability of "altering the re-

action pattern of the economy" over "detailed intervention" by the government—as the best way to break that vicious circle. For that "restricted growth" he seems to blame the static and conservative attitudes of British managements, and approvingly quotes Harold Laski's caricature of the British gentleman-merchant: "The gentleman would rather lose his income than his uniqueness." By way of urging more dynamic and progressive management attitudes, Barna makes the typical British understatement: "The management which resents the purchasing power of the working classes, which resents the increased role of women as consumers and which equally resents technological innovation in production and in distribution, is unlikely to be successful." Still, the reader may be left wondering whether the British economy will be able to grow faster merely through such a "managerial revolution" as Barna seems to recommend without at the same time adopting a more vigorous *public* policy for the growth of investment and productivity.

Turning now to Florence's monograph, the reader is informed that it represents a combination of an up-to-date statistical supplement to his previous *Investment, Location and Size of Plant* (1948), an additional supporter of the previous conclusion that "greater intensity of investment is associated with prevalence of large size of plant in any industry where location is free," and a further empirical basis for "public policy in helping the smaller plants to survive." The relevance of investment, location and size of plant to "the industrialization of the underdeveloped countries" claimed by Florence is not easily established by a mere compilation of statistical data or by statistical generalizations, however. It is a pity that Florence did not, in this connection, test the hypothesis that the location and size of plant are capable of affecting the secular behavior and structural stability of the capital-output ratio and hence of quantitatively influencing the national rate of growth of output. New comparative statistical data on British and American industries are carefully included and some relevant statistical techniques briefly discussed. Nearly one half of the Florence monograph is devoted to statistical appendices. Except to a limited number of statisticians this monograph by Florence is unlikely to prove very inspiring.

KENNETH K. KURIHARA

Rutgers University

Theories of Economic Growth and Development. By IRMA ADELMAN. Stanford: Stanford University Press, 1961. Pp. viii, 164. \$5.00.

Here is "neither a *theory* of growth nor a *model* of a growing economy. Rather . . . a structure . . . sufficiently general to treat the theories of economists as particular special cases" (p.7). The structure bears a strong and acknowledged resemblance to that of Haavelmo in his *A Study in the Theory of Economic Evolution*. We learn what view Smith, Ricardo, Marx, and Schumpeter took of the defined variables which are pretty much all-inclusive. Thus output is taken as in some sense related to the rate of utilization of the capital stock, to natural resources (subsequently an empty category), to the size of the labor force, to the fund of applied knowledge, and to the socio-cultural milieu. The last two are admittedly difficult to quantify but are of heuristic value.

The interrelationship of the variables is a "structure" of six equations. To handle the effect of discontinuities, differencing is chosen over differentiation (p.14) but, to simplify the exposition, the variables are taken as single numbers rather than as vectors and the production functions considered are assumed differentiable (p. 24).

The treacherous job of translating the masters then begins. We find that Smith regarded the sociocultural milieu as exogenously determined. Like others before her, Mrs. Adelman believes the essence of the *Wealth of Nations* to be "an unstable dynamic process . . . [whose] . . . fundamental determinant is the rate of capital formation" (pp. 39, 41). The treatment of Ricardo contains a citation, "one among several," which lead Mrs. Adelman to "see now that the Ricardian production function should not be restricted to one in which the technological coefficients are fixed" (p. 47). This is misleading enough to make one wonder whether interpretation has been clouded by the use of the term "capital-output ratio" though all is correct and explicit in the discussion of Marx. Blaug's *Ricardian Economics* seems a successful attack on the position taken by Mrs. Adelman when she asserts that "the Ricardian dictum that 'nothing can affect profit but a rise in wages' is merely a truism" (p. 54). Interestingly, the interpretation of Marx assimilates "changing relations of production" to an "index of the accumulated fund of applied technical knowledge" to include "some measure of the interaction between techniques of production and the social and economic organization of society" (pp. 61-62). After this daedal and dizzying step there follows a straightforward analysis of the Marxian system showing that "in the last analysis the clue to economic growth lies in the rate of capital accumulation" (p. 79). We find that "the evolution of a Marxian economy is uniquely determined by the initial conditions of the system and its structural parameters. There are no degrees of freedom in the system" (p. 89). Despite the predictive failure of the Marxian analysis, it "provides an excellent example of the power and importance of dynamic analysis" (p. 93). Under the template of the "structure," Schumpeter's model reveals that the rate of growth of output depends upon the exogenously determined rate of population growth, which fixes the trend of economic growth, and upon the history of technological progress. Almost without exception, works of originality and genius in the history of economic theory have been Augean stables of inconsistency. Tidying them up, one is bound to lose a few prize cattle. This is a pity but perhaps worth it if it leads to a deeper appreciation of the surviving stock.

To bring matters up to date there is a neo-Keynesian model which is considerably more neo than Keynesian. There are two actors, the labor- and entrepreneurial-forces. They receive respectively wages, which are wholly expended on consumption, and profit, including interest and rent, which is spent on consumption and investment. The factors of production are labor and capital. Full employment is assumed. Investment can affect productive capacity in the time period in question but population change can affect the labor force only in the "next period." The fund of applied technical knowledge and the sociocultural milieu are exogenously determined. The three relationships examined are the growth pattern of the labor force, the accumulation of capital,

and the growth of income. Assuming that population increases in response to an increase in the real-wage rate but that it tends to stabilize, the real wage can be explained by the capital-labor ratio. One of the determinants of this ratio is the saving-investment relationship which will be in long-run equilibrium when the natural and warranted rates of growth are the same. Familiarly, the production function is of the Cobb-Douglas type which permits the inclusion of increasing, constant, or diminishing returns. The impact of technological changes on possible shapes of the production function are examined. The conclusions are (1) that the "clue to the economy's long-run dynamic behavior may be found in its technical dynamism" (p. 133); (2) optimal population policy depends on whether the economy is experiencing increasing, constant, or diminishing returns; (3) labor-saving innovations can increase per-capita output or per-capita leisure; (4) a single injection of capital has no effect on long-run growth which is rather determined by the natural-rate-of-growth path but it can speed the approach to equilibrium. Dropping assumptions one by one, Mrs. Adelman is hopeful that careful study of the production function in a given situation may lead to sensible policy recommendations. The policy recommendations which in fact emerge would come as a surprise to no sensible person.

Coleridge spoke of poetic faith as a "willing suspension of disbelief." If, as Mrs. Adelman appears to, one has a poetic faith in index number theory, he will admire the generality of the reasoning and more especially the technical deftness and fine style which is neither over-terse nor diffuse. Even those who lack faith can admire these qualities but will sigh to read (at page 145): "The phenomenon of underdevelopment must be understood . . . in the context of the entire complex of interrelationships that characterize the economic and social life of the community."

ERSKINE MCKINLEY

Tulane University

Economic History; Economic Development; National Economies

Productivity Trends in the United States. By JOHN W. KENDRICK, with the assistance of MAUDE R. PECH. National Bureau of Economic Research, General Series, No. 71. Princeton: Princeton University Press, 1961. Pp. lii, 630. \$12.50.

A few years ago inflation was the major concern; today it's productivity. Almost (but not quite) equivalent to the raging debate over creeping inflation, today's press is filled with controversy over whether or not productivity gains should be used as a yardstick in helping to settle labor-management disputes.

Thus, it is timely to mark the appearance of Professor Kendrick's long-awaited book. For several years the National Bureau's significant work on productivity has steadily been made available in conference reports and occasional papers. But here, at last, is the basic underlying study. And, indeed, it was worth waiting for!

Unquestionably, these are the authoritative findings and methodology that

should determine the course of research in this area for many years. A long, detailed study, crammed with tables and appendices, this book looms as one of the most important and provocative studies published in the past decade.

To a considerable extent, its value lies in the painstaking care with which Kendrick has set up various productivity formulas and traced their relationships. At first, emphasis tended to be on the relatively crude but useful concept of physical output per man-hour. But the search for a better measure of *efficiency* (and productivity in this study is defined as "a measure of the efficiency with which resources are converted into commodities") coupled with more available data, led to the development of "total factor productivity," which utilizes input of both labor and tangible capital. It may not be the ultimate refinement, but in the words of Solomon Fabricant, it is "the best currently available approximation to a measure of efficiency."

Tracing the course of total factor productivity Kendrick finds that it has risen at an average annual rate of 1.7 per cent in the private domestic economy from 1889-1957. (This rate is somewhat lower than the weighted or unweighted rates of increase in output per man-hour because tangible capital input has increased at a faster rate than labor input.) However, this trend partially conceals the fact that the rate was 1.3 per cent from 1889-1919 and 2.1 per cent from 1919-1957. Since the end of the second World War it has been even higher. Looked at in a somewhat different light: since 1889 real private domestic product grew at roughly a 3.5 per cent annual rate. Thus, about one-half of the growth was accounted for by the efficiency of input utilization; the other half by additions to labor and capital inputs.

It is in the basic analysis that went into the derivation of these findings that one comes to appreciate Kendrick's impressive skills as well as the balanced research programs instituted by the Bureau. Tapping the material of literally dozens of earlier Bureau publications, the author goes deeply into the anatomy of American industry for specific illustrations. The electric and gas utilities showed the strongest productivity advances, along with nonrail transportation; while anthracite mining, lumber and leather brought up the rear. Services, too, showed lower productivity gains over this long period. However, during short spans, significant variations from these trends were noted.

Detailed appendices, as might be anticipated, comprise the bulk of the material. But the important findings are highlighted early and clearly.

How does one use a volume of this sort? For forecasters the study is a gold mine of relevant data, but the break in the productivity trend line raises nagging issues. In projecting the level of economic activity for, say, 1970 does one employ the very long relationship, or, perhaps, should the postwar experience be extrapolated? The difference might come to \$100 billion in GNP for the target year. Denison's recent study for the Committee for Economic Development is outstanding in its conservatism on this score, while the work of the National Planning Association and *Fortune* magazine highlight the more optimistic side.

Again, what of this matter of wage settlements and productivity yardsticks? In a spirited comment included in the volume, Bureau Director Stanley H. Ruttenberg of the AFL-CIO files several demurrers. He challenges the conceptual framework of total factor productivity, stating that it excludes many

intangible factors other than capital and labor. Among these he cites "education, science, technology, social organization, cultural heritage, and the quality of human skills and ingenuity which are essential to rising productivity." He also questions the "efficiency" approach of this concept in that it combines *actual* man-hours and *available* capital.

In fairness to Kendrick: at no point does he urge that the productivity yardstick be used in wage determination policies. He does, however, indicate that labor's share of private national income has risen, a finding that is consistent with the roughly long-term stability in the rate of return on capital. In addition, he demonstrates that prices have tended to rise less rapidly (or fall) in those industries which have shown more rapid productivity increases.

For the economist this is a volume to be carefully studied and considered. Fortunately, Solomon Fabricant has provided an excellent introduction which serves both as a survey of productivity analysis as well as an effective summary of Kendrick's work.

Here, then, is the solid foundation upon which future researchers will base their attempts to refine and provide more inclusive measures of productivity.

ROBERT A. KAVESH

New York University

Europe's Needs and Resources. By J. FREDERIC DEWHURST, JOHN O. COPPOCK, P. LAMARTINE YATES AND ASSOCIATES. New York: Twentieth Century Fund, 1961. Pp. xxvi, 1198. \$12.00.

Early in 1957 Fred Dewhurst first told me of his plans to do an *America's Needs and Resources* of Western Europe, to embrace the countries of the O.E.E.C., excepting Turkey but adding Finland. The study was to include a review of economic developments in the postwar period, some cross-section analysis, and projections to 1970 of the output potentials and demand patterns in terms of GNP's, as well as of some basic industrial sectors. I hope I conveyed my real enthusiasm for the project, as it was obviously the type of research of direct interest to us. But as we had recently finished a five-year projection for the O.E.E.C. Eighth Annual Report, I knew what a large job lay ahead. Hence, I did not minimize the size of the task or the statistical and other difficulties that would be encountered.

Dewhurst did not need any warning flashes; he knew the O.E.E.C. and E.C.E. reports, among others, that would provide a point of departure for the work and he knew his own capacity to see a large project through to the end. Besides excellent associate directors, he proceeded to get together a competent research staff, as well as an outstanding group of scholars to contribute to the research and writing on a part-time basis. Now, the years of patient work have passed and *Europe's Needs and Resources* has been published.

I am pleased to say that the volume immediately takes first place among the studies of the postwar Western European economy. It warrants not only the *médaille d'or* but also the *médaille d'argent*, for there is not another work that is a close second. Cast in an ample mold which requires 1200 double column pages, it is of great current interest and utility besides being a major work of reference.

While the study has the same framework and viewpoint as its American an-

cestor, the authors have been flexible in their adaptation to the European economy. After an introductory survey of Europe's postwar recovery, there follow 25 other chapters devoted to various aspects of the economy and two concluding chapters as well. The individual chapters cover all three phases of the study where appropriate, i.e. historical review, cross-section analysis and quantitative projection into the future, often supplemented by qualitative speculation about the character of economic developments that may be expected. Most chapters are supported by valuable appendices giving further statistical data and notes on sources and methodology.

The broad layout of the chapters was determined, it would seem, primarily to provide a logical flow of argument for the projections and is well suited to the aims of the study. After the first survey chapter, population and then manpower are dealt with. Then comes a general presentation of the gross national outputs and expenditures, followed by a series of ten detailed chapters on the major components of the GNP and selected subgroups. A few basic natural and industrial resources are then examined in five chapters, devoted to agriculture, forestry, fishing, energy sources and output, and minerals and metals production. Chapters on foreign trade and capital movements and on exchange and currency problems are followed by analytical descriptions of a few special subjects, i.e., underdeveloped areas, capitalism in the postwar period, productivity, technology, and economic integration.

This summary should indicate the wide scope of the volume. Of course, not every aspect of the European economy is treated and various views could be set forth about other aspects that one would have liked to see included. But, what had to be included to meet the objectives of the study, is included; possible changes in coverage relate to matters somewhat aside the main stream, like a few of the later chapters.

It is not feasible to appraise this vast body of material in detail and, indeed, hardly necessary. Almost all the chapters provide as a minimum a good synthesis of widely scattered material; and many (with their appendices) go well beyond that by contributing original research—leaving aside the projections which necessarily involve original research and judgments. The chapter and appendix on Housing, for example, is an obvious case of the best thing available on the subject. The one on Exchange and Currency Problems contains less that can be called new, but it is still more than a skillful synthesis because there emerge the reflections and conclusions of one who has deeply thought over postwar developments.

A few chapters seem to me less penetrating, an example being that on Capitalism in Postwar Europe. While of interest from a historical viewpoint, I cannot see that the judgments on the nature of capitalism, or on the degree of it in the various countries, tell much about the significant differences among the countries or about the paths they ought to follow. The reason is that the criteria used, such as the relative extent of public enterprises or of the instruments used in economic policy, are not analyzed in relation to the problems that had to be faced. There have been industries socialized because of a belief in socialism, but also enterprises taken over into the public sector to prevent the collapse of the private enterprises or public enterprises created to serve a function that was not being performed previously. The implications of these cases

are quite different, even from the standpoint of political ideology. Similarly, the need for policy instruments may be very different for a country which exports 40 per cent of its output than for one which exports 10 per cent. It is apparent also that a country may use more policy instruments as it learns to operate the economy to higher standards of stability and growth, while at the same time it strengthens the free enterprise spirit by promoting competition and reducing protection.

Current interest in the study will, without doubt, be centered on the projections, and it is to these that I would like to devote most of my allotted space. The method used is a familiar and sound one. The expected volume of employment at the end of the period was derived by starting with estimated population growth, adjusting for the various forces which may influence the participation of the population in the labor force, and then allowing for the projected decline in working hours and change in the ratio of unemployment. The volume of employment, together with the assumed rates of productivity increase, yielded the estimated potential GNP in 1970 for each country and these, weighted by exchange rates, gave the aggregate. The allocation of the potential GNP among the various end-uses was a separate operation; hence, capital-output ratios were used to derive the volume of investment, rather than the other way round. To project the use of resources, government consumption, fixed investment, inventories and the export surplus were estimated independently, and private consumption obtained as a residual. The subgroups of private consumption were estimated on the basis of demand elasticities, with a more complicated procedure taking account of existing stocks in the case of consumers durables.

The base year for the projections is 1955. The early base year is accounted for by the fact that, when the study was started in 1957, it was the latest year for which reasonably complete and final data were available.

For the 15-year period, the study arrives at an increase in the potential GNP for Western Europe of just under 55 per cent, equivalent to an annual growth rate of slightly less than 3 per cent. Receiving the volume in 1961, the first thing one is likely to do is to compare the projected growth rate with the actual experience for the first third of the projection, namely 1955-60. As the recorded growth rate was 4.2 per cent for these first five years, it is apparent that the rate of growth projected was a conservative one, and that the GNP potential by 1970 will be substantially higher than 55 per cent above the base year. If a constant rate of growth is assumed, the study's implicit figure for 1965 was nearly reached in 1960, while the growth rate needed in the present decade to achieve the 1970 potential is only 2.3 per cent a year.¹

It is a mistake to be put off by this comparison of the past, however, or to jump to the conclusion that the study is not revealing with respect to probable developments in the 1960's. For one must distinguish between the mechanics of the projections and their substance. I imagine that the calculation of the basic projections was finished in the course of 1957, and that the volume went to press before data for 1959 was reasonably complete. In 1957 the

¹ I have here allowed for the difference between the latest O.E.C.D. and the study's base year statistics.

projections might have seemed a bit conservative to some students of the European economy, but they would not have seemed unreasonable. I don't know anyone who was not surprised by the expansion of the GNP in the "recession year" of 1958; nor did anyone anticipate the size of the upsurge of the economy in 1959, and particularly in 1960, which started from a position of very low unemployment for most of the countries. Hence, one might say that the projections for the first five years were *dépassées par les événements*. This was a risk that had to be taken. The only conclusion to be drawn for future studies of this kind is that it might be better to separate the projections from the other large body of material and analysis in the volume, but to do them at the last possible moment, and to publish them quickly.

It is desirable, therefore, to let bygones be bygones, to move the base year up to 1960, and to see what the projections tell us about the outlook for the present decade. On the basis of the projected growth rate of almost 3 per cent the potential GNP for Western Europe will increase by one-third from 1960 to 1970. Here, one is confronted with the target of a 50 per cent increase in GNP for this ten-year period set by the Ministerial Council of the O.E.C.D. in November 1961. It implies an annual growth rate of 4.1 per cent. This goal covers the member countries as a group, including the United States with its heavy weight in the aggregate; but one may assume that Western Europe is expected to do its share in achieving the target.

As the difference between 3 per cent and 4.1 per cent a year is substantial, one may ask which rate of growth is likely to be more nearly borne out as the years pass. There is room for different opinions on the matter but I cast my vote with the Ministers. To bypass the many details involved in the estimates, I may support my preference by considering the prospects for the groups of industrial countries in Western Europe whose performance will determine the outcome.

The countries of the Six and Austria had an average growth rate of just under 5 per cent from 1955 to 1960. While it seems certain that the rate will be lower over the 1960's, it is still likely to exceed the Ministers' target. The past high growth rates for Germany, Austria and even Italy seem sure to be lower; however, Belgium should have an increased growth rate when the adjustment to the loss of the Congo has been made, and even France may average somewhat higher than the 4.2 per cent of 1955-60, which reflected the long pause as inflation was stopped and the franc stabilized.

The Scandinavian countries and Switzerland can be expected to have a lower growth rate also. It was 3.9 per cent in the 1955-60 period but Denmark has had a rather high rate, somewhat making up for an extended period of stagnation before 1956, while Switzerland is not likely to be able to continue the heavy importation of manpower which contributed to its past high rate of growth.

Finally, there is the United Kingdom, where the growth rate of 2.4 per cent per year has been low. The major obstacle to faster growth has been frequent balance-of-payments difficulties, which have required the authorities to maintain a restraining policy a good bit of the time. The authorities are trying to overcome this problem and I find it hard to believe that they will not meet

with some measure of success in the present decade, thereby making a higher growth rate almost inevitable. The United Kingdom itself does not have to reach the Ministerial target, which would be unlikely in view of the small proportion of unemployment at the beginning of the decade and the slow rate of growth in the labor force. The over-all target could still be met by the Six remaining above the target rate.

The target is by no means an easy one for Europe, as the increase of labor input will be small. But after the experience of the late 1950's, it does seem that the growth rate projected in the Dewhurst study is conservative. For the latter to prevail, I think some combination of the following conditions would be necessary: (1) failure of the United Kingdom to overcome its difficulties; (2) a sharp decline in the rate of productivity increase in the Continental countries from a fall in their external surplus (assuming total demand to be maintained); (3) failure of the Continental countries to maintain real demand at a stimulating level as the external surplus and the pent-up demand in a few sectors taper off. Any of these conditions is possible and each user of the projections must form his own ideas of the probabilities. I am, of course, excluding possible adverse political developments, which are excluded also by the assumptions of the study.

As to the projections of the uses of resources, there is little that needs to be said, except that it is again helpful to move the base year up to 1960. The growth rates for the various final uses of output are good working hypotheses, to be checked against the actual performance of the economy from year to year. If one is more optimistic than the study about the growth of the economic potential, this optimism must, of course, be reflected in the categories of final output. In that case it would be necessary to allow a more than proportional rise in the growth rate for fixed investment, other than housing, and probably also for consumers durables, particularly automobiles. It should be added, however, that there are widely different views about the probable growth of the automobile stock in the course of the 1960's.

I may conclude by shifting from the future to the past so as to comment briefly on the explanation of Europe's prolonged postwar boom that is given in the final pages of the first chapter. It is said that the boom was based fundamentally on great capital expansion and a vast demand for consumers durable goods, and the importance of government policy with respect to the former is emphasized. I believe that the stimulus from a buoyant export demand must be given at least equal importance with these two factors. While this is mentioned later, the key role of Europe's competitiveness in exports is not made clear; nor is it stressed that the countries which lacked this stimulus for longer or shorter periods failed to boom.

I believe also that the emphasis put upon "inflation-prone governments" is misleading from an analytical standpoint. The implication seems to be that Western Europe was continuously under the pressure of excessive demand. It must be recognized, however, that the rise in prices was partly an adjustment to suppressed inflation in the years preceding the 1950's, obviously the case with respect to the relaxation of rent controls and the removal of various consumption subsidies; that the rise of costs and prices for the

countries with a balance-of-payments surplus was in part an adjustment to the external surplus, even without there being excess demand; and that in some countries wage-cost inflation was a factor of considerable importance. At the same time, I agree fully with the author that the goal of full employment has been actively pursued.

These, however, are minor amendments to this broad and rewarding study of the European economy.

MILTON GILBERT

Bank for International Settlements
Basle, Switzerland

American Capital and Canadian Resources. By HUGH G. H. AITKEN. Cambridge: Harvard University Press, 1961. Pp. xii, 217. \$5.00.

This book is a review of the growing integration of the economies of the United States and Canada. The dilemma which this integration poses for Canada is described by the author as follows:

Every economic inducement, every opportunity for economic development impels Canada to accede to the continental pressures that now impinge on her. Every memory of historical tradition, every hope for the future preservation of national identity impels her to resist them. (P. 16.)

After an introductory chapter, the author reviews the facts of capital investment in Canada in a chapter studded with statistics gathered from well-known sources. This material will be very familiar to members of the profession in Canada and to many others, but will perhaps be less familiar to American readers. There follows a discussion of "the United States and the new staples" in which the familiar theme of American interest and investment in Canadian resources of raw materials is developed. A Canadian reader will be convinced by the time he reaches the end of this discussion that the book must have been written for non-Canadians. The discussion is competent and illuminating but does not add to the exposition or the insights offered in the publications of the Royal Commission on Canada's Economic Prospects or of the Canadian-American Committee.

The Canadian reaction to the historical trends is reviewed next. It is concluded that continental integration is not prejudicial to an increase in the diversity of the Canadian economy. It is concluded that the development of the Arctic is not a practical means of reducing dependence upon the United States, though in the last decade Canadian interest in her northland has increased. The important topic in this chapter is the Canadian worry over loss of national identity. The author finds it difficult to enumerate the respects in which Canadians enjoy separate identity; he stresses however that Canadians think they have it and that they wish to protect and develop it. "It is to preserve these possibilities of difference, rather than any manifest differences already existing, that Canadians feel compelled to resist absorption by the United States" (p. 151).

In the final chapter, the author speculates about the attitudes in Canada and the United States to the idea of a Canada-U.S. free trade area. He examines the contribution to continental integration of arrangements for the

defense of the two countries. He points to the inevitability of resistance from the provinces (whose revenues derive directly, in significant measure, from the exploitation of their natural resources) to any national policy of opposition to the economic penetration of the United States in Canada. Concluding that there is an inevitability about continental integration, he proposes that "Canada's best defense of its identity lies not in a rejection of challenges from the outside but in an emphasis on the quality of its response" (p. 193). At this point the Canadian reader finally will decide the book was written particularly for him.

Canada is at a crucial point in her history. The European Economic Community and the impending admission of the United Kingdom to closer union with this Community presents Canada with grave choices. These developments also pose difficult choices for the United States. One might have hoped that rather more than casual allusion to this critical policy choice would have been made in the book. Or, if the author chose not to deal specifically with current policy issues, one would have thought that in this book, marked as it is by a strong historical sense and perspective, he would have commented upon the implications of continental integration for the traditional Canadian problem of achieving national unity in the face of domestic racial and cultural diversity.

WM. C. HOOD

The University of Toronto

Canals and American Economic Development. By CARTER GOODRICH, H. JEROME CRANMER, JULIUS RUBIN AND HARVEY H. SEGAL. New York: Columbia University Press, 1961. Pp. vi, 302. \$7.50.

The Enterprise of a Free People: Aspects of Economic Development in New York State During the Canal Period, 1792-1838. By NATHAN MILLER. Ithaca: Cornell University Press, 1962. Pp. xv, 293. \$6.00.

Current interest in economic development has stimulated scholars, and notably economic historians, to re-examine early American experience for insights that may prove relevant to other countries now in the first painful throes of development. Both of these studies are so motivated; together they provide a rich lode of data and analysis, some of which is relevant to the world problem of economic development.

While both books deal with the canal period, differences in scope and emphasis render them complementary rather than duplicative. Students of economic development will find both indispensable. Miller limits his research to the years 1792-1838; the Goodrich study extends to 1860, well into the railroad era. Miller's interest is confined to New York State and the Erie Canal, while Goodrich and associates range beyond the Erie to analyze Pennsylvania and New Jersey canals in detail and to give brief attention to Southern and Western canals. Miller's study is not strictly canal-centered; rather, it is broadly institutional, over one-half the space being devoted to the financial and developmental operations of the Erie Canal Fund. Goodrich, on the contrary, deals more specifically with canals as such—their planning, construction, operation and economic impact. Both, however, are con-

cerned with the same basic questions: How did a people only recently emerged from colonialism and warfare, politically weak, desperately short of capital and deficient in technical knowledge manage to build these great works? How did this foundation investment in canals contribute to subsequent economic development?

By 1817 New York was not an "undeveloped area," in the pessimistic sense of current usage. Men had been dreaming of a great waterway to the West since 1724, and much exploring and planning had been done. The lure of the West, with its rich lands and unlimited opportunities, provided a powerful motivation, firing the imagination of the people and arousing their energies. Population, agriculture, industry, banking, trade and capital accumulation were all increasing rapidly; the acquisitive spirit of a burgeoning young capitalism was flourishing. In short, the economy was ready to explode if only the transportation bottleneck could be broken. Once the decision to build the Erie Canal was made the task proved easier than had been anticipated; domestic capital came forward, foreign capitalists, particularly English, were eager to invest in it, technical competence was discovered, and the Commissioners managed the enterprise with remarkable skill and integrity. A really "undeveloped" people could scarcely have done this.

This success, the authors agree, stemmed from the decision to make the Erie Canal a developmental, not an exploitative, project; it would be built by the State and operated for the public good, not alienated to some privileged corporation for private exploitation. Miller attributes this decision to the "abiding mercantilist tradition" then prevalent, to the fact that "the promotional and entrepreneurial role of the state was well established," and to the influence of Gallatin's Report of 1808 recommending public construction of canals. Goodrich and his associates, noting the same points, go on to emphasize the powerful influence of public hostility toward monopolies—"that prejudicial propensity to which incorporate bodies are subject."

New Jersey, however, in 1824 disregarded this admonition against monopoly and authorized two private canals. In doing so the legislature ignored popular protests, the advice of De Witt Clinton, and the recommendation of its own Canal Commissioners against "the pernicious, the deadly principle of confiding the vital interests of our country to the guardianship of men, whose only view can be pecuniary advantage to themselves." (Goodrich, p. 133). Both private canals involved political deals and special interest bargaining—the Morris Canal was combined with lucrative banking privileges and the Delaware-Raritan with a railroad charter. Goodrich and his associates think the Morris Canal had some temporary and local developmental effect, but that the Delaware-Raritan was almost entirely exploitative.

The canal experience of Pennsylvania was an exercise in frustration. Blocked off from the West by the Appalachians, Pennsylvania relied originally on its excellent turnpikes and gave little thought to canals. The success of the Erie Canal, however, threatened to divert Western trade from Philadelphia to New York, and this untoward prospect stimulated a belated and somewhat frenzied movement to build a mainline canal westward to

Pittsburgh with a portage railroad over the mountains. After a bitter debate between canal and railroad factions the first appropriation was made and construction started in 1826. This difficult project, including the portage railroad, was completed in 1834 at a cost of over \$12 million. In 1857 the Mainline was sold to the Pennsylvania Railroad for \$7.5 million. Although it contributed significantly to industrial development within the State, the Mainline was a failure in terms of its principal objective—to dominate East-West trade. It simply could not compete with the Erie Canal nor subsequently with the railroads. Long-range development would have been better served by an equivalent investment in railroads, notwithstanding their primitive technology, than in this uneconomic canal.

Miller shows how the Erie Canal Fund became a developmental bank, less by design than by force of circumstances. It mobilized domestic savings, attracted foreign capital, supported the banks by loans and diffusion of deposits, used debt management as an instrument of economic stabilization, and assisted the banks in meeting crises—Biddle's restriction of 1834, the great fire of 1835, the panic of 1837, and specie resumption in 1838. This use of public funds to aid private banks and to promote economic development through profit maximizing intermediaries was consistent with the mercantilist philosophy and the practical exigencies of the period.

Both studies demonstrate that investment in foundation capital is a prerequisite for economic development—a necessary first step to release the potential energy and creativity of developing economies. Both indicate that such investment can best be performed by the State. Neither author, however, ventures an opinion as to whether this early nineteenth century capitalist experience is relevant to the goals of undeveloped countries in the late twentieth century. The construction of canals was an integral feature of capitalist development; the State acted to assist a young, aggressive capitalism; the principal benefits accrued to bankers, merchants, investors, industrialists and land speculators. Will a system of economic development so motivated and directed prove acceptable or viable in the underdeveloped countries of our time, where social conditions and attitudes are so radically different? The presumption is strongly against it; the probability is that the State will not only provide the foundation investment but also control the direction of development.

HORACE M. GRAY

University of Illinois

The Emergence of a National Economy, 1775-1815. Volume 2, The Economic History of the United States. By CURTIS P. NETTELS. New York: Holt, Rinehart and Winston, Inc., 1962. Pp. xvi, 424. \$7.50.

This survey of American economic history between 1775 and 1815 constitutes volume two, and the eighth to appear, in the ten-volume series on *The Economic History of the United States*. The series is well planned, has high standards of workmanship, and has value for the research scholar and general reader alike. Each volume presents a well-digested and -documented

treatment of a significant period or episode in the nation's economic development. The present volume fully maintains these high standards and is compactly, judiciously, and interestingly written. The text (340 pages) is comprehensive, detailed, and heavily footnoted. There are an extensive bibliography (40 pages), an appendix (18 pages) containing statistics on population, public finance, wages, prices, manufacturing output, exports, imports, etc., and a detailed index (22 pages). Since this reference work constitutes an authoritative survey of economic change from 1775 to 1815, it provides a fine starting point for research concerning this period. Its author, professor of American history at Cornell University, is on the editorial board for this series; his related works include *George Washington and American Independence* and *The Roots of American Civilization: A History of American Colonial Life*.

This volume relates the events through which and manner in which the colonial economy of 1775 was transformed into the thriving, industrializing national economy of 1815. It sketches the character and extent of this transformation, as well as the political and economic innovations which prompted it. However, *what* happened receives greater stress than *why*; the treatment is more narrative than analytical, more descriptive than explanatory. The first two chapters describe in narrative fashion the economic impact of the American Revolution. The next two set forth postwar problems of foreign trade and domestic depression and the initial efforts to remedy them. Two others describe major economic changes produced by adoption of the Constitution and Federalist program. Three chapters depict the land policies, pioneering settlement, and agricultural development of the period 1775-1815, while two others trace the expansion of foreign trade. Three chapters describe innovations in transportation, manufacturing, and business organization. The last chapter narrates changes in national economic policy just before and during the War of 1812. Thus, the first six chapters and the concluding one treat in narrative form the unfolding relationships between political and economic changes, while eight intervening ones are topical treatments of particular sectors.

Nettels states in the preface that this was a period of political instability, "a time of revolution, war, and reconstruction," in which political and governmental changes transformed economic activity. He asserts that the role of government, including "political innovations and emerging institutions," must be stressed in this period since "the achieving of independence, the making of the Constitution, and the establishing of the federal government provided the legal foundations on which the structure of the economy of the United States has rested since 1789." Nettels is quite justified in proposing this emphasis, which may apply to later periods in only lesser degree. Indeed, his cut-off date of 1815 renders it difficult for him to articulate this emphasis. The political innovations, new policies, and evolving institutions of this period often reached fruition or had their major consequences long afterward. Consequently, his treatment of them, and especially of their consequences, remains incomplete as of 1815. Furthermore, his narrative and

descriptive method hardly allows him to analyze or interpret their effects and significance. The narrative approach seemingly does not facilitate historical explanation or analysis in cause-and-effect terms.

His obligation to cover myriad facets and details, reflecting the huge literature which he examined, causes Nettels to deal sketchily with such issues as Beard's economic interpretation of the Constitution, the central-bank function of the Bank of the United States, and the differing viewpoints of Hamiltonians and Jeffersonians. He does not highlight issues of interpretation, controversies in the literature, or major generalizations. Although he stresses emerging institutions and the role of government in the preface, his reader must do much inferring and generalizing to bring them into perspective and assess their long-run significance. As regards the legal foundations of capitalism, he barely mentions patent laws, bankruptcy laws, enforcement of contracts, legal aspects of slavery, and the place of the courts in protecting property rights. With respect to the role of government in promoting economic development, he only briefly notes the Northwest Ordinance, Louisiana Purchase, Lewis and Clark Expedition, Cumberland Road, and Gallatin's plan for internal improvements—without discussing early government interest in science, engineering, a proposed national university, and a coast survey or its activities fostering new territories and states, western exploration, engineering education, coastal fortifications, and collection of scientific data. Although it lacks comprehensive analysis of evolving institutions and of government's promotional role in this period, this reference work amply provides the research basis for such inquiries.

FOREST G. HILL

The University of Texas

Soviet Industrialization, 1928-1952. By NAUM JASNY. Chicago: Chicago University Press, 1961. Pp. xviii, 467. \$10.00.

The senior Western student of the Soviet economy has made another important addition to a long and distinguished list of his writings. *Soviet Industrialization, 1928-1952* is broader in scope than anything Dr. Jasny has produced thus far. It purports to cover all major aspects of the Soviet economy during the Stalin era, and to provide interpretive analysis of the developments under review with his own supporting statistical measurements. The task is nothing less than Herculean, particularly when it is remembered that Jasny is now in his late seventies and (to put it in his own words) "has only his pencil as an assistant." What is astonishing, in view of all this, is not the extent of inevitable omissions and the area of disagreement, but the degree of solid accomplishment.

Jasny sees no merit in subdividing the Stalinist era by the successive Five-Year Plans as it is usually done by Soviet writers. He offers instead the following periods: the "warming up" (1928 till the fall of 1929), the "all-out drive" (1929-1933), the "three 'good' years" (1934-1936), the "purge era" (1937-1940), and the postwar period, labelled somewhat jauntily "Stalin has everything his way." (The war years are omitted.) The major part of his narrative is organized in accordance with this scheme. It is

preceded by two introductory chapters, summarizing the main conclusions of the book and giving a thumbnail sketch of the developments of the first post-revolutionary decade. A brief "postscript" deals with the events of the post-Stalin era. In addition, there are two statistical appendices, and a note containing a moving tribute to Vladimir Groman, one of the leading non-Communists in the councils of the early Gosplan and the chief defendant in the notorious "Menshevik trial" of 1931.

The rich fare provided in the volume defies adequate summary within a short space; only a few highlights are possible. This reviewer found the description of the "all-out drive" of the early 'thirties particularly rewarding. The monumental distortions and imbalances in the economic system during these years are presented more fully and forcefully than in any other source he knows, and the table showing huge divergencies between some of the key targets of the initial draft of the second Five-Year Plan and the actual fulfillment vividly illustrates what Jasny calls "bacchanalian planning." Yet the author very properly cautions against premature conclusions when he comments: "it seems certain that the blunders of the *All-out Drive* are not going to be repeated in full strength" (p. 29). The discussion of the agricultural situation contains much that is new in sections dealing with the postwar period and displays throughout the incisiveness and skill which one has come to expect from the author of the pathbreaking *Socialized Agriculture of the USSR*. It was in this field, incidentally, that Jasny performed his major statistical *tour de force* when he adjusted sharply downward the figures of the official Soviet grain series based on the so-called "biological yield"; his results turned out to be very close to the figures of the "barn yield" series released by the Soviet authorities seven years later. Speaking of statistics, Jasny is undoubtedly on the right track when he castigates the official Soviet fixed investment series and specifically, the part pertaining to the postwar period. It is indeed hard to reconcile the figure for the volume of fixed investment in 1945 which shows a decline of only 9 per cent from the 1940 level with everything we know about the very drastic drop in the output of constructional material and of important categories of civilian machinebuilding as a result of the war; and it could be easily shown that a downward revision in the investment figure of 1945 would require a corresponding adjustment in the investment figures for later years as well. Yet with regard to the last period of the Stalin rule, the profound scepticism toward the official statistics and equally profound distaste for the policies described do not prevent Jasny from recognizing the achievements in terms of growth. After citing his own estimates of Soviet economic expansion during the seven postwar years (more than 50 per cent increase over the level of 1940, and more than 100 per cent above 1945) he concludes: "All in all, a favorable picture, except for the price of this growth. . . . It is left to the reader to appraise this price as compared with the attainments" (p. 430).

These and many other instances illustrate the qualities which have been generally recognized by students of Jasny's earlier writings: a strong sense for facts, an uncanny ability to uncover weaknesses and incongruities in economic reality and in its statistical portrayal without losing perspective

and forgetting about elements of strength, and, last but not least, boundless energy and enthusiasm. Yet while these admirable traits of the "Jasny approach" are clearly present in *Soviet Industrialization*, so are some of its controversial aspects. The computations of Soviet national income put forward in Jasny's earlier writings have been repeatedly criticized for his incomplete description of the underlying derivations, for the unrepresentative character of his price data and for his excessive reliance on "rule of thumb." More specifically, it was argued that Jasny's price data were particularly deficient in the area of newest and fastest growing output categories such as machinery, and that this circumstance, together with the inclination to use the 1928 outputs as weights for price indices was bound to result in excessively high deflators and thus to understate the rate of growth. No doubt, most of these shortcomings are due, in large part, to superhuman difficulties of working alone in a vast and immensely complex field; but this, unfortunately, does not make them less real, and Jasny's present volume will not dispel the doubts. (Actually, his revised national income series, based on "real 1926-27 prices" shows a somewhat lower rate of growth for the prewar period than the original version. On the other hand, it should be noted that Jasny's index for the postwar period diverges much less from the official Soviet index and from other Western estimates than his prewar figures, possibly because a more stable composition of Soviet output during the postwar years resulted in smaller sensitiveness of the production index to difference in weights.)

In short, it is difficult to escape the conclusion that a valiant attempt to adjust downward the inflated figures of Soviet statistics has been, in this particular case, carried too far. But also outside the murky area of index numbers there are points in Jasny's analysis which one would like to question; in this reviewer's view, they stem almost invariably from a tendency to overstate a good case. A few examples are in order. Jasny's description of the "all-out drive" is, to repeat, highly effective in demonstrating massive irrationalities of the official policy at that time; yet the evidence which is entirely adequate for this purpose, is not sufficient to sustain the proposition that "real national income was actually declining during the greater part of the All-out Drive" (p. 16). Similarly, Jasny's strictures against the inefficiency of Soviet investment during the same period would be more convincing and less vulnerable to attack if he had explicitly acknowledged that many investment projects launched under the first Five-Year Plan could not conceivably have been completed within the time horizon of this plan even under the best of circumstances, and that for some of them the long "period of waiting" would be justified by their (properly discounted) returns. With regard to the 1937-1940 period, Jasny would have been right in arguing that the purges of the late 'thirties must have contributed to the significant slackening in the pace of Soviet economic growth during these years. But it is difficult to understand his refusal to admit that the drastic shift toward military preparedness must have also had something to do with it: wasn't a slash in the volume of investment going to iron and steel industries by nearly two-thirds which paralleled a rapid increase in the share of munitions in the steel consumption from 1934 to 1938, bound to result

in a lower rate of growth even if there had been no purge? Lastly Jasny deserves our gratitude for reminding us of Groman's leading role in the work on the "balance of national economy" which was published in the mid-'twenties. However, it is an exaggeration to argue, as he does, that the checkerboard table of this balance embodies "the idea of input-output analysis" (p. 441). In fact, it represents merely a modest step beyond the constructs of Quesnay and Marx, but contains no trace of the concepts of direct and indirect input coefficients or of the underlying computational and analytical techniques which constitute the heart of Professor Leontief's method.

Yet it would be utterly unfair to conclude on this note of criticism. Like all scholarly works of enduring value, Naum Jasny's writings enlighten even when they provoke disagreement, and *Soviet Industrialization* is no exception. He has put us in his debt once again; and all his friends will undoubtedly share this reviewer's fervent hope that he will keep enlarging this debt for many more years.

ALEXANDER ERLICH

Columbia University

The Soviet Economy: An Introduction. By ALEC NOVE. New York: Frederick A. Praeger, 1961. Pp. 328. Clothbound and paperback editions.

This is an excellent book—a model introduction to a complex subject. My only serious complaint is that the book is too short. Mr. Nove has a very succinct style and packs a tremendous amount of information and analysis into a page. The result is that beginning students may find the book demands more concentrated attention than they expect to give to a book with the disarming subtitle, "An Introduction." If they persevere, however, they will find their persistence well rewarded. Their instructors can refer them to the book with confidence that Nove writes with learning, clarity, and careful judgment in controversial areas.

The book is divided into three Parts, "Structure," "Problems," and "Concepts and Ideas." The first Part has chapters on "Productive Enterprises," "Administration, Planning, Policy Decision," "Public Finance and Credit," and "Wages and Prices." These are primarily descriptive and very well done. It is a little disconcerting at first to have to search through several chapters to find what one wants on, say, agriculture; but Nove's scheme of organization is perhaps more meaningful to the economist than is the usual topical institutional approach. This Part would have been improved, however, by the inclusion of a chapter on foreign trade (in place of the few pages following p. 189) and by a chapter on health, education, and recreational activities. If we are interested in the inter-country comparison of real wages, it is desirable to make explicit the importance in the Soviet world of this collectively provided part of real wage income.

Although a little historical material is woven into the account, personally I have found economics students so ignorant of Russian economic and social developments before the Revolution that it is necessary to fill them in with the background of the continuing agrarian problem, forced draft industrialization, and the role of the state in economic development. Otherwise,

they tend to regard as being exclusively Communist, phenomena which really are traditionally Russian. Likewise, because of student ignorance, I have found it essential to give a brief sketch of Russian economic geography. Nove may be more fortunate with his students at the London School of Economics; but for American colleges and universities introductory chapters on Russian economic development before the Revolution and on Russian economic geography would greatly improve the book. In my courses, I shall probably supplement the book by assigning readings in Hugh Seton-Watson's, *The Decline of Imperial Russia, 1855-1914*, which gives just the background needed to supplement Nove's book.

Although the statistical tables are well chosen, I wish there were more of them.

It is in "Part II: Problems" ("Micro-Economic Problems," "Planning and Investment," "The Pricing of Factors of Production," and "Trends Towards Reform") and "Part III: Concepts and Ideas" ("Some Basic Concepts of Soviet Economics," "Soviet Economics and Economic Laws," and "Assessment") that Nove is truly excellent and goes beyond the normal textbook in this field. His distillation and presentation of the complex debates within the Soviet Union about economic theory might profitably be assigned as supplementary reading in intermediate theory courses.

There is a very useful short bibliography at the end, a subject index, and an index of names.

This short but scholarly book can be strongly recommended as a basic text (if supplementary material is assigned) for courses in the Soviet economy or for courses on comparative economic systems in which the emphasis is on the U.S.S.R. It is refreshing to find an author who can say so much that is worth while in such a short space and can say it in so literate a style.

JACK TAYLOR

Rochester, New York

Méthodes de prévision du développement économique à long terme. Report of a group of experts. Informations Statistiques, No. 6. Brussels: Stat. Office of the European Communities, 1960. Pp. 172. Bfr. 250.

This highly specialized report by a panel of seven European experts was written at the request of the authorities of the European Coal and Steel Community. The product of the joint effort of these experts is a set of uniform techniques and guidelines designed for economic planners in the countries comprising the European Economic Community. In other words, this study is strictly for the specialist.

The authors rely predominantly on econometric models. In their view (p. 537) the over-all, rather than the detailed, approach is more suitable for economic programming, and they devote much space to an elaboration of an over-all production model, to methods of estimating total demand, and to the reconciliation of the projections to be obtained by these two approaches.

The production model chosen by the authors is the well-known, and recently again popular, Cobb-Douglas production function of the type $Y =$

$\beta K^\lambda L^\mu$, where β rises exponentially over time and $\lambda + \mu = 1$. Inasmuch as this production function assumes an unchanged economic structure, high elasticity of substitution between factors, and constant returns to scale, the question of its applicability to the future conditions in the EEC may be raised. Since technological progress is generally recognized as an autonomous factor in the growth process, it appears that the authors have postulated that the Common Market will not affect technological progress greatly.

While the stress placed on the supply side is quite understandable in a period of rapid economic growth in Western Europe, typified by full employment and inflationary pressures, the authors are definitely correct in rejecting the notion that it is supply which sets the limits to economic growth and thus in stressing also the main elements on the much more elusive demand side. In doing so, they seem to be guided by similar thinking so eloquently expressed recently by Professor Hollis Chenery when he wrote: "Since market forces cannot be relied on to balance supply and demand under conditions of . . . accelerated growth, a principal concern of development policy is to ensure the consistency of production levels with commodity demands and factor supplies" (*Am. Econ. Rev.*, March 1961, p. 48). The reconciliation of these two projections has definite merits since it permits a more careful insight into the problems of economic capacity, the level of employment, etc. Thus, both approaches could provide an indication of the magnitudes of the adjustments that will be required. On the other hand, the question as to what the residuals represent, that is, whether they are systematic errors or only temporary inequalities, is left to the practitioners to decide.

The specialist in the field will find only little that is original and new in this study. In addition, in reading the French version he will soon discover that "prévision" means programming, or projection, or forecasting; but he will be compensated inasmuch as the authors proceed slowly, carefully, perhaps at times too meticulously. The 53-page-long statistical appendix may be of some interest; it does not seem, however, to be well incorporated into the text.

Finally, in reading this report, one often wonders whether the authors would recommend in the economically less developed countries the same techniques they recommend for the advanced European countries. This issue was left out entirely. Of course, this was outside the immediate scope of the authors' assignment and one cannot criticize them on this score.

STEPHEN SPIEGELGLAS

Boston University

Development of the Emerging Countries: An Agenda for Research. By R. E. ASHER, E. E. HAGEN, A. O. HIRSCHMAN, G. COLM, T. GEIGER, A. T. MOSHER, R. S. ECKAUS, M. J. BOWMAN, C. A. ANDERSON, AND H. WRIGGINS. Washington: The Brookings Institution, 1962. Pp. xi, 239. \$3.75; paper, \$2.75.

If anyone still wonders why research on development processes is attracting many able scholars, he will find an answer in this conference volume. It reveals exciting frontiers of current investigation where each skill of the

social scientist is useful, but all have something to learn beyond their usual disciplines. There are six papers, plus one comment and a concluding review, selectively harvested from a meeting of 75 specialists in May, 1961. The participants were asked how research resources should be spent by the Agency for International Development, the foundations, and each other. The authors have prefaced their essays by stating the leading hypotheses in their fields having relevance to international assistance. It is the further testing, refinement, and use of these hypotheses in studying particular problems which make up the "agenda for research." Several authors state pointedly that aid programs could better take into account what we already know about development.

Everett Hagen presents as the framework for analyzing economic and political change his system of interacting "technical-economic" and other social variables. The exposition utilizes new material showing a positive correlation between the level of economic development and the "competitiveness" of the political structure. He explains the role of "creativity" in adaptive innovation, and suggests that certain present-day response patterns were produced by past colonial experience. From these considerations he derives several sensible precepts to guide U.S. policy. He advises that future research employ perceptive skills that examine problems in more than their material dimensions.

Commenting on the "framework" problem, Albert Hirschman urges Americans (especially J. K. Galbraith) to be less concerned about fulfilling prior conditions for making aid effective and to notice that development occurs "invariably in the absence of one or several of these 'required' components or preconditions" (p. 41). It is these "new or inverted sequences" which research must explain and which aid may promote.

Hirschman suggests, too, that the Hagen and W. W. Rostow explanations of growth are logically the same, because they both stipulate sets of preconditions to be satisfied at a certain stage. But there is, in the reviewer's opinion, a very important difference between the Hagen and Rostow models of change. Hagen gives several informal indications that he is not using a stage theory, including the statement that in "almost all underdeveloped countries . . . conditions are somewhat conducive to growth, and somewhat deterrent" (p. 26). In order to give precise meaning to the time-ordering concepts of "preconditions" or "stages," it would be necessary to confine changes in some subsets of the variables (i.e., assign certain distinctive types of events) wholly to particular historical periods. Hagen appears to have decided against such restrictions. Instead, he envisages continuing interdependent change, even in that part of his model which involves the production of "creative" persons. In Hagen's book, *On The Theory of Social Change* (Homewood, Ill., 1962), published subsequently, his differences with Rostow are made explicit (pp. 514-22).

Gerhard Colm and Theodore Geiger describe a procedure of "pragmatic planning" which corresponds well with our limited knowledge of how planning is being done. It provides a basis for utilizing together tools which have at times competed against each other for exclusive authority, such as

mathematical programming, project appraisals, and judgment. Because we have less analytical knowledge of planning experience than of theoretical precepts, research should now stress the former. For a perspective on development planning techniques, this essay is a good reading assignment at the graduate level.

Arthur Mosher writes about research on rural problems. He asked colleagues in his field to identify and rank research needs in relation to the operation of technical assistance programs. Their answers and Mosher's own perceptions are combined in an outstanding survey suggesting many specific research hypotheses. He recommends that research activity be fostered abroad because it is a process which itself teaches and develops people. The role of research as a development process was stressed by several other authors, too.

R. S. Eckaus, writing on technological change, is impressed by our lack of quantitative knowledge of technological relationships, by which he means the description of inputs associated with particular outputs. He advocates the massive collection of such data at a micro level, with reference both to current and possible technologies. With such information and a refined theory of technological choice in hand, aid programs could supply answers to questions that they now only ask. The Eckaus assistance process is to supply knowledge from abroad and to use foreign consultants when problems arise in the field. It contrasts with the concern for domesticating learning processes within the aided populations which most of the other authors express.

Mary Jean Bowman and Arnold Anderson write about the role of education in growth diffusion processes. Because change initially is localized and unbalanced, the problem is to facilitate its diffusion and multiplication.

Howard Wiggins examines the relationship of foreign assistance to political development. Assistance programs intrude on the complex process of political change, notwithstanding the myth of "non-intervention." He indicates some of the many questions we need to answer to become aware of the full consequences of aid programs.

Robert Asher edited the volume and writes a brief concluding review. Altogether, these essays are an excellent and economical opportunity for professional economists to acquaint themselves with some of the issues and methodologies that now occupy social scientists in the development field.

FREDERIC C. SHORTER

Princeton University

The Statistical System of Communist China. By CHOH-MING LI. Berkeley and Los Angeles: University of California Press, 1962. Pp. x, 174. \$4.00.

Among the many basic problems of research on Communist China, perhaps none is more controversial and stands in more urgent need of a thorough investigation than that of the reliability of official statistics. The book under review is the first serious attempt to tackle this complicated problem through a study of the development and inner workings of the statistical system.

The study falls into three parts, each dealing with the development of

the state bureau and its impact on the quality of statistics in 1952-57, 1958, and 1959-60, respectively. Out of a massive collection of fragmentary information, the author painstakingly pieces together a coherent and fascinating story of the continuous struggle of the state bureau to build up an independent statistical service amidst many difficulties, not the least of which is the constant resistance from the "business affairs departments," the Planning Commission, and the local cadres. The period 1952-57 witnessed the gradual development of the state bureau into a relatively workable system, only to be shattered by the abusive use of statistics by local party members during the big-leap movement in 1958; eventually the system emerged more penetrating and effective than before, but subject to tighter political controls. The study, however, is much more than a history of the state bureau. Changes in the comprehensiveness and accuracy of statistics which accompanied changes in sources of information, methods of compilation, effectiveness of quality control, and quality and morale of the personnel, are all carefully examined. Very briefly, the broad conclusions are that, despite some improvements, the quality of official statistics in 1952-57 was rather poor, became much worse in 1958, and remained in an unsatisfactory and uncertain state thereafter. On the relative quality of different types of statistics, the author accepts the Communists' own ranking.

Most readers will be impressed by the author's mastery of the art of uncovering the hidden, by his penetrating analysis and lucid presentation. His keen observations on the limitations of the quality control devices, on the question of barn versus biological yield, and on the implications of the "partisanship principle" are examples. The chapters on the 1958 big-leap episode are especially incisive. Here the reader is given an excellent account of how and why the statistical fiasco took place. The discussions on the shortage of trained statisticians, lack of standardization of statistical schedules, and inadequate supply of measuring equipment are certainly worthy of the serious attention of policy makers in underdeveloped countries.

However, the reader whose primary concern is the usability of official statistics will perhaps find the treatment of many key problems inadequate and the conclusions at times so sweeping as to raise rather than solve problems. The following are some examples.

The author raises the question of double-bookkeeping on page 60, but does not refer to it again until the last page of the book, where he concludes that "if it is true that only statistics of achievements are published while those reflecting difficulties and problems are either withheld or not collected at all, then there are not likely to be two sets of national statistics, one for planning and the other for propaganda" (p. 149). It may be true that only a single set of books is being kept by the state bureau, but the conclusion would perhaps require something more convincing than a statement based on a priori reasoning. For while double-bookkeeping and the withholding of information are both tools of propaganda, the use of one does not necessarily preclude the use of the other. The fact that more than one account is prepared by the lower echelons (pp. 85, 119, 120 and 134) certainly calls for closer examination of the problem rather than for a single, highly speculative observation.

Professor Li's study is primarily concerned with statistical errors that are introduced in the course of the flow of the statistics from the primary establishments or basic administrative units to the center. Virtually nothing is said about methodological deficiencies in technical processing of the data at the center, and errors at the primary level are touched upon only incidentally. It is understandable why the technical biases are left out of the picture, but the lack of a systematic and thorough analysis of possible errors at the primary level seems to this reviewer a major omission, for two principal reasons. First, the study thereby leaves open many questions bearing directly on the reliability of statistics. For example, are there any write-ups, write-downs, or other unintentional errors at the factories or cooperatives? If distortions are deliberate, who falsifies and why? To be sure, some such errors are mentioned, but they present an incomplete picture. For example, the overreporting of output by factories noted by the author (p. 44) is but one form of falsification. At times, some underreport their output, presumably to show a more dramatic increase in the next period. Similarly, some agricultural cooperatives distort their reports in different directions for different motives, overreporting the cultivated area to obtain larger quantities of seed, and underreporting the same to reduce the tax quota. Other distortions, such as inflation of basic construction statistics, or fertilizer accumulation reports that conceal product adulteration, have not been considered. In sum, the study fails to bring out the nature and extent of the built-in institutional biases characteristic of Soviet-type economies, where rewards to the individual are often directly linked to his statistical showing.

Furthermore, the rather narrow scope of inquiry limits seriously the possibility of appraising the over-all quality of the statistics. Clearly, organizational improvement is a necessary but not sufficient condition for improvement in the quality of statistics. Thus the breakdown of the system in 1958 inevitably led to deterioration of quality, and here the author is in a position to, and does indeed, make some very specific comments. But the resurgence since 1958 provides no assurance of quality improvement, not merely because of possible subjective intervention by party committees (as the author correctly points out), but also because of the possibility of errors originating at the primary establishments or caused by methodological deficiencies.

In discussing the quality of agricultural statistics in 1952-57, the author contends that those of 1955 were probably the least unsatisfactory (p. 58). As his evidence he cites three reasons: the establishment, for the first time in 1955, of statistical committees at the hsien level or below; the editing of reports at different levels of the local government to balance the tendency of the production bureau to inflate the figures against that of the tax collection and internal trade bureaus to do the opposite; and an inclination among the local leadership to inflate figures in 1956-57. The author does not explain how the hsien committees could have contributed substantially to the quality of agricultural statistics in 1955 as compared to the pre-1955 data. In fact, it is doubtful whether they actually did. For the major method of investigation was the same model survey used in 1953-54, the models were primarily the same mutual aid teams and cooperatives, and the persons in

charge of reporting were the same local cadres (pp. 30-31). The two arguments for the assertion that quality was higher in 1955 than in 1956-57 are also open to question. The observation that there were two conflicting biases is based on a single sample in a particular area in Hopei (p. 29). Even if it applied to the situation in general, it is by no means certain that the biases could be canceled out through editing. In fact, the author himself notes that such editing was often arbitrary (pp. 29, 43). As for the third observation, no specific evidence is given.

But granted that all of Li's observations are valid, two serious doubts remain. First, the inference that between 1949-57 agricultural statistics in 1955 were best (p. 58) is clearly inconsistent with another statement that from 1954 onward, to the end of 1957, the quality of official statistics improved (p. 63). Second, the inference itself seems hardly justified by the author's own arguments because, as noted above, errors other than those resulting from the collecting and editing by the cadres have not been taken into consideration, e.g., the widespread underreporting of output and cultivated area by the cooperatives in 1956-57 (pp. 32-33). The conclusion on page 58, therefore, requires either a *ceteris paribus* reasoning or the assumption that, on balance, the upward bias in editing is overwhelmingly strong, which in turn would need concrete supporting evidence.

The book includes a useful bibliography on the subject. But, surprisingly, it leaves out such items as the several handbooks for statistical work available in addition to that for agriculture. Also, the press communiqué on economic achievements in 1959 is conspicuously absent, although the data from this and other sources would be useful in filling some of the blanks in Table 2 (p. 90) and in strengthening certain arguments in the text. The reader may also miss a flow chart showing who collects what from whom and how, an aspect on which information is unfortunately scattered and incomplete. For instance, the observation that annual schedules collected from state, joint, and cooperative enterprises constitute a complete count (p. 37) is interesting for its implication about statistical coverage, but not very enlightening since it is not made clear what specific series (other than some industrial indicators) are included in the regular schedules.

Despite these limitations, this highly readable volume will be extremely valuable to all students of Communist China, not only for its many insights into the statistical system but also for the clear, unmistakable emphasis on the need for caution in the use of official statistics. Indeed, it will compel the reader to ponder over such statements as those by Joan Robinson and Sol Adler that "the Chinese are conservative rather than otherwise in their compilation of statistics for economic planning" and that (for 1958 and before) "grain production data represent not the biological crop (on the stalk) but the crop in the barn after it has been dried in the sun."¹

K. C. YEH

The RAND Corporation

¹ Joan Robinson and Sol Adler, *China: An Economic Perspective*, The Fabian Society, London 1958, p. 2.

India's Economic Growth Processes, Problems and Policies. By J. K. SENGUPTA AND A. SEN. Calcutta: The Post-Graduate Book Mart, 1961. Pp. xvi, 260. Rs 15.00.

This wide-ranging collection of papers is divided as follows: Part I, "Growth in the Agricultural Sector"; Part II, "Growth in the Industrial Sector"; Part III, "Industrial Labour in a Growing Economy." The first part consists of three chapters by Mr. Sen while the second and third parts were authored by Mr. Sengupta. Topics include a spectrum of subjects, each of which could be better handled as a monograph. However, much useful information is compressed succinctly in each paper.

Sen's treatment of agriculture's production, productivity and prices reproduces the conventional governmental data and constructs original indices to highlight important phenomena. Thus an index of agricultural productivity derived by dividing the index of agricultural production by the index of area under cultivation shows that in spite of a substantial rise in output, the yield per sown acre has not changed much—even in the modern period of planning.

Linking up this conclusion with the question of why agricultural productivity should remain stagnant, the chapter on agricultural structure, seeks to demonstrate that the answer does not lie in changing insecure, small land holdings. In his policy chapter on tenancy, Sen points out that data from the United States and Japan suggest the explanation lies not in the conventional input of labor (which has fallen relatively) or capital (which has increased but slightly), but rather in improvements in the quality of resources employed; i.e., more investment in human resources and improved techniques. Since investment in human agents is not readily sellable to the rural people because immediate benefits are not apparent (wherein he says, lies the failure of community development), it is best to concentrate on changing the nature of nonhuman agents. Farm management assistance, "improved seeds, adequate fertilizers, water management, timely tillage and other practices will result in startling increases in output" (p. 57). Other conclusions such as allowing market forces freer play make good reading in the United States, but probably will have little effect in India.

The linkage and unity of thought manifested by Sen is not carried out in the second and third parts by Sengupta who has presented discrete essays on various aspects of planning, industrial productivity, location theory, problems of excess capacity, rationalization, industrial relations, wages and profit sharing. In spite of the absence of any summary package, the author formulates a good discussion of each topic and generates useful though sometimes hackneyed or dated insights.

Thus in the Mahalanobis planning critique, questions are raised for example, about the failure to specify sectoral capital output ratios (p. 82), the failure to subdivide the capital goods sector into subsections, as was the consumer sector, and the failure to guarantee greater utilization of manpower. This kind of critique has been heard before. Also of a familiar ring are dated discussions such as the size of the third plan. These last sections also suf-

fer from a compactness and heaviness of style, and the book as a whole is marred by numerous typographical errors which some old-fashioned proof-reading might have easily removed. In spite of such blemishes, the book seems to be a useful critical summary of important aspects of India's developing economy.

DANIEL L. SPENCER

Howard University

Formulating Industrial Development Programmes—with Special Reference to Asia and the Far East. Report by a Group of Experts. Development Programming Techniques, Series No. 2. Bangkok: U.N. Economic Commission for Asia and the Far East, 1961. Pp. xiii, 137. \$1.50.

The object of this study is to provide expert technical guidance to governments of the ECAFE region in the programming of development plans. The group of six experts, under the chairmanship of Hollis Chenery, of Stanford University and currently with the U. S. Agency for International Development, included a Soviet planner and produced a unanimous report.

The main theme of the report is the interrelation of analytical techniques, industrial structure and statistical data required for programming. The report is composed of three parts. The first part applies the conceptual framework developed in other studies to the three levels of analysis required for industrial programming; aggregate, sectoral and project. The analytical procedure is then used in the second part as a basis for evaluation of statistics available in the ECAFE region and for suggesting areas where improvement is most urgent. The last part reviews the industrial planning experience of the more advanced countries in the region in order to suggest procedures that may be useful to others.

Industrial planning seeks to allocate resources over time to achieve a set of specific social goals. The essentially static concept of optimum allocation of resources has to be married to the dynamic notion of growth. The technique of programming propounded in the study under review is that of activity analysis that attempts to go beyond the simple input-output matrix in order to reconcile feasibility with efficiency. Feasibility is tantamount to insuring that inputs will be consistent with levels of output derived from demand projections, and efficiency is assured by the use of the social productivity criterion, i.e., the social return on capital investment. The six experts are fully aware that in a dynamic setting efficiency of production changes over time, that external economies exist and that prices of inputs and outputs differ from opportunity costs. To deal with these difficulties the authors of the study introduce the concept of accounting prices and the notion of the iterative planning. Accounting price represents the opportunity cost of an input, or the loss to the economy that would result from a reduction of its supply by one unit. Inasmuch as the estimates of accounting prices can at best be only tentative they are subject to constant revision as industrial projects are considered and evaluated. The revision of accounting prices in turn modifies the calculations of industrial specialists and affects the decisions over specific projects.

It is a great merit of the report that theoretical assumptions are not set

out didactically and that the authors are constantly aware not only of imperfections of data but, perhaps more importantly, of the complexity of the decision process where qualitative, intangible, or political considerations may obscure the rationality of development programming. It is readily assented, for example, that project decisions may have to be modified by such considerations as self-sufficiency, the desire to help underdeveloped regions or the aim to propagate scarce skills. But the study points out that the programming technique is still superior to any other decision function in that it can be precise as to the cost of achieving alternative goals and so provide a basis for intelligent choice, even if the choice is to be made on grounds other than economic.

Another useful feature of the study is the suggestions it contains, at every level of analysis, of the ways to fill in the gaps in the requisite data which are bound to occur in most of the countries embarking on industrial planning. Thus, for example, at the aggregate level of analysis, projections of demand for a given output can, if necessary, be made by using the income elasticity coefficients borrowed from other countries and cited in the study.

In the same vein, techniques and procedures employed in programming are illustrated throughout by examples of actual work done in other countries. The examples most frequently used are taken from studies of Peru which while not in the ECAFE region possesses many of the structural characteristics found in the region.

It is regrettable, if unavoidable, that the study, which is admirable as a manual of industrial programming, is not self-sufficient but has to refer to other studies on development planning published by the United Nations. One would also like to see a more extended discussion of accounting prices and particularly some hypothetical illustrations of their computations and subsequent revision in the light of, say, development of new export outlets. But there can be little question that, at the very least, the study will serve as a powerful stimulant to planning and will cause a revision of many "intuitive" industrial priorities. Nor is the study itself, or the techniques it suggests, premature for the countries of the region. In India, for instance, at least one-third of total industrial output is destined for other producing sectors and other countries in the region show an even greater degree of complexity and interdependence among industrial sectors.

In fact, the timing of the publication of the study coincides with the announced change of emphasis in U.S. aid from a mere examination of individual projects to an evaluation of the total contribution to a country's development program. The technicians administering aid as well as those in the recipient countries will find the study of great practical value.

ALEK A. ROZENTAL

Agency for International Development

A Magyar mezőgazdaság termelés: korzetek. I. A szántóföldi növénytermelés korzetek. By DR. TIVADAR BERNAT AND DR. GYORGY ENYEDI. Budapest: Mezőgazdasági Kiado, 1961. Pp. v. 168. Ft. 120.00.

The title of this book may be translated as *The Production Regions of Hungarian Agriculture*. The subtitle I. *The Regions of Fieldhusbandry* in-

dicates the intention of the authors to write another volume, or volumes, on regions of other branches of Hungarian agriculture. The purpose of the study, as the authors state it in the Preface, is to attempt to define and analyze the existing (1954) production regions of Hungarian agriculture.

A special, practical reason for publishing the study, say the authors, is "to draw the attention of the planning authorities to the enormous possibilities which lie in the optimal placing of production, and in its geographical specialization, particularly during the rapid collectivization of Hungarian agriculture." The objective of the authors seems to be to rehabilitate the geographic division of labor in Hungarian agriculture which existed before the war. They spell this out in their critical words about the past: "Our agro-political actions, during the first five-year plan,¹ because of the lack of regional knowledge, determined the production purposes of the individual areas in a way that was contrary both to the natural conditions of production and to the interests of producers. The uniform production schemes not only reinforced the underdeveloped production structure of the past decades, but in some regions (onion-region of Mako, paprika-regions of Szeged and Kalocsa, etc.) even degenerated the recognized geographic specialization, weak as it was, because of the large emphasis on grains" (p. 14).

The authors go on to say that a large number of the producers, following the directives and aims of the five-year plan, were obliged to develop agricultural specialties, and to allocate resources, in ways which often led to a decline of the volume of products from a unit of land.

"The neglect of regional research and the underestimation of already existing modest achievements in the working out of regional economic plans resulted, in numerous regions, in the alteration of the production structure in the wrong direction. Because of this, and also because of the disregard of the law of value,² the formerly weakly developed regional division of labor did not, generally speaking, develop further during the first five-year plan. In certain regions it even withered away, causing great damage both to the producers and the people's economy.

"It is the task of the future, to renew and reinforce the regional specialization of agriculture concurrently with the increase of production and even in the interest of it" (p. 15).

The authors also suggest that scientifically defined agro-regions be the basis for the preparation of national development plans.

The method used by the authors for defining production regions of each major crop was to determine the ratio between the average yield of a township and that of the country as a whole. In the case of the complex regions of fieldhusbandry, the authors regarded the money value of production per unit of land as the most important indicator reflecting productivity and intensity of farming. Skillfully using these principles, the authors give a comprehensive analysis of Hungarian fieldhusbandry which is undoubtedly

¹ I.e., during the Rakosi-regime.

² Favored jargon for the practice of paying producers' prices at near cost of production level.

the best seen so far. Fifty maps and 100 tables supply a well-selected documentation to the narrative.

The Hungarian, and most other agricultures in Eastern Europe, have grave production problems for two reasons. The economies of the countries cannot afford to subsidize agriculture; therefore productivity is low. On the other hand political and not economic considerations play the primary role in forming agricultural policy. Geographic specialization of agriculture, as it came into existence historically, was a reflection of past socio-economic conditions. The last remnants of these conditions in Hungary had been destroyed by the total collectivization of agriculture, by the time this book was published. Although the effort of the authors to give sound principles for the development of agricultural regions is laudable and largely successful, the responsible authorities will hardly be in a position to pay too much attention to geographic niceties in the midst of a recently collectivized agriculture with problems comparable to those of colonizing the moon.

M. L. SZABO

Regina, Saskatchewan

Economic Systems; Planning and Reform; Cooperation

The Economics of Socialism Reconsidered. By HENRY SMITH. London: Oxford University Press, 1962. Pp. x, 225. \$4.80.

Henry Smith (vice-principal of Ruskin College, Oxford) is an old Fabian socialist. "The subject of this book," he begins, "has been the main interest of all my adult life." However, its title may mislead. The book deals only briefly and incidentally with the constructive welfare economics of a socialist state, the subject of books with similar titles by Renard, Jevons, Hall, Dickinson, J. H. Smith, and this reviewer.

Chapters 2, 3, and 4 (80 pages) discuss neoclassical economics, Keynes, and Marx. Smith rejects most of Marx, approves most of Marshall and Keynes, and urges the application of orthodox economics to the problems of a socialist state. His argument is lucid and convincing, but not new. Dickinson pioneered this important thesis 30 years ago.

Since orthodox economics is applicable to socialist problems, "there is no need for any separate socialist system of economics . . ." (p. 15). But Smith is contemptuous of past efforts to apply orthodox economics to socialist problems. Such effort "suffers from the defect that it commences from what economists take to be the end of economic life—the maximization of output" or welfare (p. 95). Instead, socialist economists should plan how to eliminate economic conflict. By ending it they would "prevent the emergence of economic calculation as a necessity" (p. 135).

In Chapter 5 Smith argues that liberals can make capitalist states almost as equalitarian and productive as any socialist state, and cites English experience with income taxes and nationalization to support this point. He ignores or minimizes the enormous wastes due to capitalist competition, advertising, style cycles, product differentiation, inheritance, unemployment, etc.

In Chapters 6 and 7 Smith elaborates his principal, and highly original, thesis that socialism should be redefined as "the minimization of conflict arising out of economic relationships" (p. 9). By this he means that socialists should strive to create a society in which labor is so productive and brief that marginal effort causes no pain, in which capital is so abundant and incomes so high that marginal saving is painless, in which all goods are so plentiful they can be distributed free of charge (pp. 130-31). As he notes, "the Marxist definition of communism marches very closely with the [this] definition of socialism . . ." (p. 11).

The author admits that his thesis "certainly breaks away from the hackneyed text-book precept that 'human desires are unlimited'." He asserts that some persons of modest means are now satisfied with their lot, and pleads for "the universal acceptance of a modest standard of living" (p. 133). A socialist state should produce only those traditional necessities required for a modest but comfortable life. No new consumers' goods should be invented, no old ones improved. The socialist ideal is a static society because change creates economic conflict. In any case, "all the best things to eat and drink and all the more civilized ways of pleasing, adorning and amusing the mind and the body were discovered long ago" (p. 156).

Smith implies that, when anyone refrains from consuming a luxury, he reduces the real costs of other men. Hence, such behavior is an "ethical ideal." We reply that in a socialist state the costs of luxuries could and should fall on each consumer according to his consumption. Moreover, workers would continue to welcome painful marginal work which resulted in more than compensating pleasures of consumption. And such marginal work and consumption need cause no economic conflict. Competition for equally available, fairly priced goods and jobs is beneficial cooperation, not harmful conflict.

This book is largely a collection of miscellaneous rewritten articles and papers. As a result, most of the chapters are poorly related to each other and to the author's main thesis. Thus Chapter 8 is largely devoted to the balance-of-trade problems of a capitalist Britain. And Chapter 9 deals with recent Indian economic planning.

BURNHAM P. BECKWITH

Laguna Beach, California

Problemy politicheskoi ekonomii sotsializma: vypusk 1960g. (Problems of the Political Economy of Socialism.) By Y. A. KRONROD, editor. Moscow: State Publishing House of Political Literature, 1960. Pp. 304. 64 kopecks.

This work, written by members of the Economics Institute of the Academy of Sciences, is interesting as a contribution to what the Foreword describes as "creative scientific discussion." (The Foreword goes on to say: "The development of theory is manifestly impossible without creative debate about new problems. Accordingly the authors have by no means eschewed the posing of controversial questions; hoping that this will contribute to the development of an economic theory of socialism.") As a straw in the new wind blowing in Soviet economics, it may be noted that in argu-

ments with opponents there is a studied avoidance of name-calling. It is also to be noted incidentally that no representative of the rising school of Soviet mathematical economics is included. The volume represents a collection of articles grouped around the theme of the working of a socialist economy. Its dimensions are rather too slight for problems to be explored very exhaustively, and none of the contributors goes very deeply into his subject. Most of the contributions, however, are thoughtful and fresh, touch on important questions and are far from being repetitive exegesis.

A somewhat scholastic opening article by A. I. Pashkov, "On general and specific economic laws in Socialism," is followed by an interesting study (by R. G. Karagedov) of the place of profit as an incentive to the enterprise. The implication is that more emphasis should be laid upon it as the central economic instrument of *khozraschot*; although the writer remarks incidentally that "an important insufficiency of the existing index of profit is its extremely weak relation to the utilised productive funds [i.e. capital] of the enterprise." Kronrod, as a leading exponent of the value-principle in the price discussions of the past five years, restates his position on price policy in relation to the arguments of each school of opponents: the traditionalists (Maizenberg in particular), the advocates of an equiproportional mark-up (representing "surplus product") on *sebestoimost* (Kulikov, Sakov), and the price-of-productionists (Malyshev, Atlas, Vaag). With regard to the latter his reply is interesting, if not wholly convincing: namely, that the principle of price of production would only be relevant if there were "inter-branch [i.e., inter-industry] mobility and competition of capital"; since there is not, and investment is centrally planned and allocated, prices should be made to reflect the comparative labor expenditures of different products; and for the purpose of taking investment decisions the coefficient of effectiveness of investment can be adjusted as between industries to allow for differences in the size of basic and turnover funds (total capital) relatively to labor (pp. 127-28). This latter suggestion seems to be equivalent to using a special accounting price, of a price-of-production type, for purpose of investment decisions. It might well go some way to meet the problem that the price-of-productionists have in mind; but it could scarcely take account of differences in the amounts of capital used in producing the inputs of the industry in question, and to this extent would still leave comparative costs and hence the index of relative effectiveness distorted. Moreover, one feels inclined to ask whether *quasi*-mobility of capital may not be greater than the writer supposes, to the extent that under the current trend towards decentralization the initiative (at least) regarding investment plans is pushed down nearer to the enterprise.

Another noteworthy contribution is that of A. I. Notkin, known for his studies of "expanded reproduction" (i.e., dynamic problems with net investment). He is concerned with the "law of the optimum proportion between investment and consumption" (perhaps this will sound less strange to "western" readers if *zakon* is translated as "principle" instead of "law"). A principle emerges according to which the ceiling on investment is defined as such a rate of investment as will not create an upward pressure on retail

prices of consumer goods (p. 158), thereby causing, presumably, no fall in real wages—a condition admittedly unfulfilled in the prewar decade. But this definition is arbitrary: it does not explain what the initial price level is that must not be disturbed; and this, as we know, is determined *inter alia* by the rate of investment. Using an initial ratio of net investment to national income of 20 per cent and a capital-output ratio of 2.5 (called “the coefficient of investment needed to increase national income by one per cent”), the writer gives a series of examples to show that, with the share of investment growing by one per cent as national income grows, the level of consumption per head of population (assumed to grow by 3 million per annum, or about 1.5 per cent) will be higher after the seventh year than if the investment-share had remained constant or had declined by one per cent per annum. As regards changes in the capital-output ratio, he cites Soviet statistics which suggest that this has fallen since 1940, though unevenly in different industries, falling most markedly in building and rising in agriculture (where it is particularly high).

There follow two chapters of some 30 pages each, one on *kolkhoz*-property (by V. G. Venzher) and the other on the role of the credit system and ways of strengthening it (by V. M. Batyrev).

A concluding chapter surveys and dismisses the various western writers from Lerner, Dickinson and Beckwith to Mises and Hayek and Hoff who have discussed the economic theory of socialism. The writer (S. A. Khavina) is well-informed and well-read (including even Barone and Schumpeter's *History of Economic Analysis* in her ambit); but her treatment is disappointingly superficial and lacking in light and shade, and is not so very different from that of any other article of the past two or three decades on a similar theme. Although the writers surveyed are distinguished as “bourgeois” and “petit bourgeois,” their points of contrast are not explored, and the general tendency is to treat them as a “homogeneous reactionary mass”—as writers who uniformly try, in obscurantist fashion, to oppose an idealist-subjectivism notion of socialism to real socialism as actualized in Soviet economy.

The work is pleasantly produced, in an edition of 25,000 copies; it has no index.

MAURICE DOBB

Trinity College, Cambridge, England

Obshchestvenny uchet truda i tsena pri sotsializme. (The Social Accounting of Labor and Price under Socialism.) By I. S. MALYSHEV. Moscow: Sotsekgiz, 1960. Pp. 363.

Ocherki po voprosam balansa narodnogo khoziaistva. (Essays on Problems concerning the Balance of the National Economy). By V. A. SOBOLOV. Moscow: Gosstatizdat, 1960. Pp. 226.

These two books have this in common that they call for the same radical departure in price-setting and use the same arguments to justify their proposal. This is not surprising considering that Malyshev edited Sobolov's book. Since Sobolov's analysis of synthetic balances reduces to a rather pedestrian description of the work done in the Central Statistical Administra-

tion of the USSR on the subject (which does not warrant separate review), I shall comment only on the aspects of his work dealing with price theory, where he dovetails with Malyshev.

The main point Malyshev and Sobol' wish to put over is that the price of a good should be set to cover the average production costs (*sebestoimost'*) of all producers in an industry, plus a certain amount of profits, or "surplus value," proportional to the fixed and working capital used in this industry. The above rule, with certain exceptions, would apply to consumer goods as well as to producer goods. Their proposal diverges from present practice where prices are set at certain periodic intervals so as to cover variable costs plus amortization in producer goods industries (together with a very small profit margin proportional to costs), while most of the "surplus value" generated by industry is levied in the consumer goods' sector in the form of turnover taxes, representing the difference between retail prices (tending to equilibrate effective consumers' demand) and a lower level of production costs.

The strategy Malyshev and Sobol' have adopted to convince their readers is in itself instructive. They could not get away with an a-Marxist or, to use Oskar Lange's terminology, with a "praxiological" approach to the price-setting problem, based on efficiency considerations alone. L. V. Kantorovich in his controversial book on the optimal allocation of resources could afford to do this only because he is an established mathematician and not an economist in the Soviet sense of the word. Malyshev and Sobol', who are political economists, had to build a solid Marxist foundation for their ideas. This turned out to require a basic rethinking of economic categories and basic principles valid in the socialist stage of development. According to our authors, a socialist planned economy turns out "products" but not "market-commodities" (*tovary*). The "law of value," in the sense of a spontaneous, unplanned influence on allocation, does not operate under socialism, either in the producer-goods or in the consumer-goods sector, since free markets are practically nonexistent. Malyshev goes so far as to claim that prices on the kolkhoz market are "determined not by the law of value," e.g., by the spontaneous effects of supply and demand, "but by state prices in retail trade" (p. 70). He also denies the existence of a true market for consumer goods, since the government can always manipulate supply to equilibrate effective demand at any preordained level of retail prices (p. 132). The main point is that procurement and sales are planned just as systematically as production. The only law of value under socialism is the "constant and objective necessity of accounting for social labor and of observing the objective principles arising out of this necessity" (Malyshev, p. 49).

In the process of establishing these propositions, Malyshev and Sobol' go out of their way to assail powerful figures such as academician Ostrovitianov and to criticize the semiofficial handbook of political economy (*Politicheskaiia Ekonomia*). Several ideas in Stalin's *Economic Problems of Socialism in the U.S.S.R.* are scored (though there is no mention of Stalin by either author).

Do the nature of goods and the operation of the law of value under socialism warrant so much controversy? They do of course if one wishes to

convince Soviet readers that prices under socialism should be set consciously in much the same way as they would be formed under capitalism under the impact of market forces. For then it is essential to show how different the paths are that lead to the same result and that there is only a resemblance in form but none in content. Indeed, the matter is so delicate that Malyshev and Sobol' stress mainly the "differences in essence" leaving it to their critics to dwell on the convergence in form!

When Malyshev and Sobol' eventually turn to the business at hand—the correct principles that should guide price-setting practice—they begin by confounding certain views they consider erroneous. They have little respect for the "voluntarists" or "subjectivists," represented by L. Maizenberg and other price-setting officials, who have no clear theoretical principles and are pleased to tinker with the existing price system to stimulate or to inhibit the production or consumption of certain products. Malyshev objects, quite correctly in my view, that the voluntarists have no reliable standard by which to judge how they should influence allocation by price policy. Maizenberg, for example, proposes the manipulation of fuel prices to spur local coal production. This can easily be done, Malyshev agrees, but the main problem is whether or not this local production is advantageous from the viewpoint of the national economy as a whole. Here Malyshev seems to have stumbled across the familiar "dilemma of central planning," according to which economic calculation can only be used as a guide to efficient allocation decisions when the prices used in these calculations already reflect an efficient allocation.

With their other ("non-voluntarist") opponents in the Soviet price-setting debate, Malyshev and Sobol' share at least one view: they all agree that prices must be set equal to value including surplus product. What sets them apart is the question of how to divide up the total surplus product of the economy among individual industries. (This surplus product, or "accumulation," is defined, for practical purposes, as national income minus total wages and other incomes in the "productive sectors," the difference being equal to the total profits plus turnover taxes paid to the state or retained by these sectors.) Some economists would like to distribute this surplus among producers in proportion to production costs (*sebestoimost'*), and some, including academician Strumilin, in proportion to their wage expenditures; our authors, as I have already mentioned, would like to distribute the surplus *pro rata* with the fixed and working capital in each branch of industry. The idea in all three cases would be to set uniform prices for each industry's product equal to average costs in the industry plus the appropriate share of surplus product. This would serve as a norm of "socially necessary costs," against which the costs of individual producers, also including surplus product, might be compared. Malyshev shows, more systematically than Sobol', what nonsenses would arise out of pricing methods which would set profits proportional to *sebestoimost'* or to wages. Such prices would cause enterprises to concentrate on the production of material- or labor-intensive products; they would promote the consumption of (presumably scarce) capital-intensive materials, and so forth. To these methods Malyshev and Sobol' oppose their notion of "production prices" (*tseny proizvodstva*), equal to

average production costs in the industry plus a percentage of the industry's fixed and working capital equal to the ratio of the yearly surplus product generated by the productive sectors to the value of the fixed and working capital of these sectors. They seek to prove that this pricing method would give the right answer to problems of investment efficiency, would cause the right materials to be substituted, and, finally would create an incentive for enterprises to economize on their fixed funds and to accelerate their turnover of working capital. (It has been argued by some authors in the West that, for the purpose of regulating the work of socialized enterprises, interest on fixed capital need not be included in the prices of producer goods in Soviet-type economies, inasmuch as enterprises have no control over the capital entrusted to them. But, as Malyshev points out, enterprises often have a choice between ordering more or less capital-intensive goods; they are likely to hoard surplus equipment if they have no incentive to report it to superior authorities; finally, they may be induced to request less expensive equipment to save on amortization and interest costs.) In his discussion of prices and investment alternatives, Malyshev shows a higher degree of sophistication than most Soviet economists: he is aware of the significance of resource limitations (e.g., of the scarcity of capital) and he shows familiarity with the notion of opportunity cost (p. 200; see also Sobol', p. 71).

So far I have not commented on the intrinsic value of the pricing method proposed by the two authors. Would prices set in this manner qualify as efficiency or opportunity-cost prices? I think they might come closer to satisfying this requirement than either present prices or any of the alternative schemes considered; nevertheless, they also suffer from a number of defects: (1) The unique profit rate on capital is largely arbitrary. In effect it is assumed that capital is the only scarce factor besides labor and that it generates all profits. This ignores returns to other factors such as land and mineral resources which may also be a source of profits or taxes in the Soviet Union (e.g., turnover taxes on gas and petroleum). Wherever there are diminishing returns, there must be returns to scarce factors. (2) In a Soviet-type economy, where almost all the saving is done on government account, the ratio of profits and taxes to the capital stock will tend to vary with the level of investments; but the true marginal efficiency of capital need not move in parallel fashion. (3) It is only by coincidence that the prices of consumer goods arrived at by this method would clear the market at prevailing income levels. It would be optimistic to expect that relative market supplies could be adjusted to consumers' demand at these prices without running into bottlenecks and rising marginal costs. (4) Once prices were set at the level of Malyshev's "prices of production," a completely new price structure would emerge. The capital stock would have to be revalued. Neither the ratio of surplus value to national income nor the ratio of "accumulation" to the capital stock would be exactly the same as before. Prices fully conforming to the new formula could only be arrived at by successive approximations.

Malyshev and Sobol', unlike Kantorovich (to whom they unfortunately never refer), are inhibited by their strict adherence to Marxist tenets. They recognize the scarcity of capital and they would like to express this scarcity

in the price system, but they must maintain the fiction that labor is the source of all value. By dint of numerous references to the third volume of *Capital*, they try and demonstrate that the surplus value generated by labor under socialism should be redistributed according to the amount of capital attached to each worker. Although this is only a step toward a theory of efficient prices, it is still too far afield for most Soviet political economists, who have expressed their negative attitude on these new proposals in a number of adverse reviews. There are, however, some exceptions. As one of the critics regretfully put it, "the idea of a socialist price of production . . . has received particularly strong support from engineering-technical personnel, who are attracted by the fact that it . . . purports to offer . . . an automatic answer to all complicated economic questions." (A. Probst in *Voprosy Ekonomiki*, no. 3, 1961, p. 81.) He might also have deplored that a number of economists interested in mathematical methods, including academician Nemchinov and V. D. Belkin, profess views similar to Malyshev's. It is interesting, as a matter of fact, that the lineup of Soviet economists for and against Malyshev and Sobol' is much the same as it was for and against Kantorovich's book when it appeared in 1959. For example, A. Katz who distinguished himself by his vigorous attack on Kantorovich in 1960 assailed the "price of production" theory and the notion of a unique profit rate on capital in 1961 (*Voprosy Ekonomiki*, no. 4, 1961). What disturbs these critics of course is that both the Kantorovich and the Malyshev-Sobol' approach are irreconcilable with their interpretation of the labor theory of value. Ia. Kronrod articulated their common point of view as follows: "If identical . . . masses of average labor, expended on different branches, more or less intensively equipped with capital, were to represent different quantities of socially necessary labor, then this means that these identical masses of labor would perform as creators of different quantities of value; in other words value would be determined not by live labor, in the form of abstract labor, but by some sort of a combination of labor and means of production." He concluded that such ideas conflict with the labor theory of value and that they "basically coincide with the theory of the productivity of factors of production." (*Voprosy Ekonomiki*, no. 10, 1960, pp. 90-91.) If Kronrod's interpretation of Marx is correct, so much the worse for Marx and for Soviet price theory.

JOHN MICHAEL MONTIAS

Yale University

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

The Secondary Mortgage Market—Its Purpose, Performance, and Potential.

By OLIVER JONES AND LEO GREBLER. Los Angeles: Graduate School of Business Administration, University of California, 1961. Pp. xv, 281. \$6.50.

This book is of interest and value in the fields of marketing, finance, real estate and other fields of applied economics. It is a type of investigation which has been largely neglected although it should be a kind of study which is one of the economist's greatest contributions.

What legal setting will make a free-enterprise market feasible and efficient in a particular field? In this study the authors have considered the impediments to a market in which mortgages can be readily shifted from one holder to another. With minor exceptions such a market is notably lacking at the present time. The authors are at pains to point out that the Federal National Mortgage Association has never been permitted to operate as a true secondary market where there is continuous free buying and selling, and that it does not promote a true market. It has too often operated as a one-way street, buying but not ordinarily selling. The FNMA operations consist primarily of purchasing mortgages at the time of origination and holding them indefinitely.

This study finds that the same reforms which would promote a secondary mortgage market would also greatly improve the primary market. The nature of the study can best be conveyed by simply listing some of the major conclusions and recommendations of the authors. The interest rate charged on FHA and VA mortgages should be market determined. Competition among mortgage lenders should be promoted by standardizing statutory restrictions on terms that may be offered on conventional mortgages. Competition among mortgage lenders should also be promoted by removing restrictions on the geographic area of their lending operations. A uniform mortgage code should be adopted by all states. Statutes and regulations that particularly circumscribe mortgage lending by commercial banks should be reviewed with the objective of removing anachronistic restrictions on the flow of mortgage funds. A thorough study should be directed to the feasibility of encouraging competition between mortgages and other investments by more nearly equalizing the ability of mortgage lenders to attract savings and invest in nonmortgage assets.

Market makers and mortgage companies should be allowed to obtain federal charters, which, in turn, would place them under federal supervision. Statutes that require portfolio lenders to make on-the-site inspections should be revised. A classification system for conventional mortgages should be developed. The legal and administrative procedures that surround the transfer of a mortgage should be simplified.

The authors do not have confidence that these reforms would automatically generate a strong, thriving and adequate secondary mortgage market. They recommend the creation of a Federal Central Mortgage Corporation which could buy and sell mortgages and make short-term loans to market makers and portfolio lenders. The FCMC would also charter and supervise market makers and mortgage companies, conduct the studies and analyses necessary to develop a system for classifying conventional as well as federally underwritten mortgages, and take appropriate actions to encourage state governments to cooperate with the program of reform. The corporation would, further, collect and disseminate the market information needed by market makers, such as current data on prices and activity, provide the centralizing focus necessary for bringing the net balance of supply and demand conditions to bear on mortgage prices, and issue debentures tailored to the needs of untapped sources of savings.

Jones and Grebler have done an outstanding work in evaluating rules of law and role of government which will be conducive to private enterprise ac-

completing needed economic goals in an efficient manner, not only in the field of secondary mortgage markets, but in considerable measure with respect to the real estate market, the mortgage market and the financial markets in general.

HOMER JONES

Federal Reserve Bank of St. Louis

Bank Holding Companies. By GERALD C. FISCHER. New York: Columbia University Press, 1961. Pp. xii, 215. \$5.50.

One of the principal structural problems and perhaps the most bitterly contested issue in commercial banking today is that of independent unit versus multiple-unit organization. Dr. Fischer has made a significant contribution to the factual background and analysis of this question in his recent book on *Bank Holding Companies*. Such a publication is long overdue, since no general work in this area has appeared since Professor G. T. Cartinhour's *Branch, Group and Chain Banking* (1931). The book is logically organized, and is presented in precise, effective style. By means of questionnaires and personal interviews with holding company officers and competitive independent banks, the author has collected information which throws new light on the issues.

The first three chapters provide a historical summary of chain and group banking from its origin in the 1880's through 1929. Reasons for the rapid expansion during 1927-1929 are developed, along with federal and state regulatory actions. The next three chapters carry on the survey from 1930 to 1961, dealing with growth, comparative suspension records, and the course of federal control. A summary of the Bank Holding Company Act of 1956, together with its administration by the Board of Governors of the Federal Reserve System is also included.

Chapters 7 through 9 deal with the competitive position of holding company banks. The author finds that, while constituent banks benefit from a number of holding company services, there is no very basic difference between them and competitive independent banks which often enjoy comparable services from city correspondents. The most fully utilized service by the group organization is in the investment area where the company's specialized staff is able to give small member banks much needed assistance. Other helpful services pertain to loans, reserve position, operating methods, tax questions, and legal counsel. The author also finds that directors of group banks are "composed almost completely of individuals from the community who are independent of the holding company."

Expansion in number of units has occurred principally by merging existing institutions rather than by formation of new banks. In fact, 138 banks were acquired by the 15 main groups between 1948 and 1960. While other factors were operative, shareholders of independent banks decided to merge in most cases because they were offered a more valuable and more marketable security in exchange for their shares. Moderate though not striking benefits, the author concludes, usually accrue to both small banks and their communities from group affiliation. While interest rates paid on deposits and charged on

loans are determined as a rule at the local level, communities benefit from better services as a consequence of keener competition. This is evidenced in particular by more aggressive loan policies, fuller use of cash resources, and modernization of equipment and facilities.

In conclusion, Fischer believes that "a group's greatest contribution stems from its capacity to provide many of the facilities of a large bank without extensively sacrificing local autonomy. . . ." He visualizes further intrastate development of group banking as "the only satisfactory, even though temporary, answer" to problems which the unit banker cannot solve, and which in the end make widespread branch banking inevitable.

G. WALTER WOODWORTH

*The Amos Tuck School of Business Administration,
Dartmouth College*

International Economics

International Trade: Theory and Economic Policy. By JAROSLAV VANEK. Homewood, Ill.: Richard D. Irwin, 1962. Pp. x, 426. \$7.50.

To the numerous texts dealing with international economics is added this high-powered survey. Depending upon the equipment available to the student, this book carries or pushes him to the furthestmost boundaries of the subject. It is certainly not an elementary and hardly an intermediate text. The approach is persistently advanced employing many of the most recently developed tools of analysis.

Historical and institutional analysis are almost completely absent—mention is made of *an* "international monetary fund" but never to *the* I.M.F. The use of algebraic methods is limited, but mathematical and particularly geometrical methods are extensively employed. The author's aim is to bring together the most contemporary and original contributions on the various frontiers of international economics, to consolidate them, and present a simplified analysis based on these developments.

Conforming to the widely accepted practice of quadripartite arrangement for texts in international economics, this book deals firstly with the balance of payments and national income accounts; secondly with the balance of payments adjustment mechanisms; then with the pure theory of international trade, and finally with the problems of economic policy for the international economy. Conformity however ends with this concession, since the contents are both original and synthetical with a wide-sweeping scope. The author skillfully covers the major ideas of complex international economic theory and presents the components in new lights.

Throughout the study there is an attempt to recognize the economist's obligation to provide answers to the important policy questions. Of greatest relevance here is the attention given from time to time to policy problems of economic integration. Vanek attempts to apologize for the extreme oversimplifications of reality presented but he points out that mismanagement frequently results from a neglect of the pure theory of international trade which provides an understanding of the setting and conditions of monetary balance of payments equilibrium, the focus of most attention today.

The balance of payments accounts are treated from both the flow and stock points of view and linked with national and sectoral accounts. The approach is elaborate, yet Vanek formalizes the traditional approaches making for a tighter system of analysis. It exposes some of the weaknesses in the façade of international economics as for example the difficulties of dealing with the foreign goods component in domestic consumption and government expenditure. Once presented, however, the accounting system developed is abandoned appearing irrelevant for the rest of the book.

In Vanek's view the absorption approach to balance of payments adjustments adds little to the income analysis derived from the more conventional income approach. Nevertheless he finds no solution to the immeasurable difficulties created by considering price and income changes simultaneously involved in the adjustment process. Since he considers that capital transfers and donations, unlike current transactions, are not very responsive to the rate of foreign exchange, he is able to elaborate on their separate influences on the foreign exchange market, export and import prices and hence the terms of trade, concluding that the change in the exchange rate will have the same sign as the autonomous transfer under stable conditions.

The treatment of the pure theory of international trade is comprehensive and represents a masterly compression of diverse theory. Vanek makes considerable use of Meade's geometry in establishing the conditions for general equilibrium in international trade after treating numerous supply and demand conditions and attempting to justify the use of community indifference curves. The application of welfare theory to foreign trade conditions supplies Vanek with the rather conventional conclusion that free international trade can always generate greater satisfaction to the communities involved than can domestic trade by itself.

Policy matters given most attention include commercial policy or direct trade policy, general economic policy for internal and external balance, and policy for a customs union. Again considerable use is made of involved geometry. Details of a general model employing the Tinbergen theory of economic policy are presented, although the mathematical relationships are not developed. Vanek finds that use of the exchange rate as a tool of policy should be avoided in coping with short-run disequilibria. Monetary policy tends to affect both the current and capital accounts of the balance of payments in the same direction, whereas fiscal policy affects them differently. He finds that the three policies have to be used in some appropriate mix in order to achieve the three target objectives of full employment, price stability and external balance. He does not incorporate directly into the model the objective of economic growth.

One of the most interesting chapters both from the point of view of economic theory and contemporary public policy is the last, which deals with the theory of customs unions. Vanek makes use of the concept of the excess offer curve which is based on joint offer and demand in two commodities to and from a third country, and he establishes general equilibrium solutions for all three countries with the aid of Meade's geometry. From the point of view of equity and economic efficiency most of the analysis points to the great de-

sirability of complete free trade by the union. It is obvious that new internal and external balances will have to be established by each country; Vanek however does not extend this part of the analysis very far.

Some of the areas dealt with rather lightly in the book are the problems of international liquidity, foreign aid, and economic development. Attention given to international trade and economic growth is very brief especially in view of the wealth of new literature on this aspect and the relevance of the topic in current economic policy.

Some will question the value of using throughout such high levels of abstraction, which provide only limited policy conclusions. Others will ask whether such complicated analyses were really suitable for a text and whether the complex theory can serve as any guide to empirical studies. Although the arrangement and the exposition of the book are logical and beautifully pedagogical, the author is not always easy on his reader. For example, assumptions are sometimes established, then relaxed or dismissed, and then re-established within one short passage; each conclusion reached must be carefully related to the special framework within which it was established. The reader is continually challenged to work out alternative methods of analysis or to extend into even more complex areas the examinations under study.

The book contains a useful selected bibliography and a short appendix describing the basic tools of analysis and setting out the limits of the mathematical application. The profoundness of the study makes it essential reading for the graduate student. Any student will need to bring much theoretical equipment with him in studying this book; however it is certain he will take much more away.

KENNETH J. ROTHWELL

Dartmouth College

Canadian-American Dependence: An Interindustry Analysis of Production and Prices. By R. J. WONNACOTT. Contributions to Economic Analysis, No. XXIV. Amsterdam: North-Holland Publishing Co., 1961. Pp. xiv, 143. \$4.50.

The Canadian Dollar, 1948-1958. By PAUL WONNACOTT. Canadian Studies in Economics, No. 13. Toronto: University of Toronto Press, 1960. Pp. xiii, 162.

Within a few months of each other, the Wonnacott family has produced two solid contributions to our knowledge of the Canadian economy. R. J. Wonnacott applies the technique of interindustry analysis to the measurement of interrelations between United States and Canadian prices and production. His contribution goes beyond these measurements to some pioneering methodological work on interregional models and on input-output solutions subject to constraints on industrial capacity. Paul Wonnacott's study is the most substantial effort yet to evaluate the results of Canada's flexible (since 1950) exchange rate. Because the debate over fixed *versus* flexible exchange rates has reached the point where laboratory experiments are sorely needed, this appraisal has great potential significance.

There are several possible approaches to international input-output analysis: each region has the same technical coefficients; each region has different technical coefficients for producing the same products; each region produces a different set of products. The first approach requires some further assumption, such as the existence of nontraded goods, to make it differ significantly from a unified national model. The second and third turn out similarly in the usual interindustry model, which allows only for relations of complementarity among inputs. Be they similar or different, each region's products are traded and transformed only on the basis of fixed proportions. R. J. Wonnacott has a reason for making the distinction, however, between the cases of differing regional coefficients and differing regional products. He is interested in interindustry models with some sectors subject to constraints of maximum capacity. When a U.S. industry is pushed to capacity operation in satisfying an assumed bill of final demand, such a model allows the competing Canadian import to make up the deficiency.

Workers in input-output analysis have found capacity limitations easy to handle when they can make do with an iterative rather than a general solution to the model. Wonnacott shows, however, that a unique general solution not only exists in the case where capacity limitations are present but that it is computationally feasible if they are few enough. This he demonstrates in a model having a capacity limitation on the American nonferrous metals industry (apparently picked at random for this honor). As often happens, the empirical results of this interindustry analysis contain few surprises. The Canadian and American sectors most dependent on the other country's production are the heavy exporters or those dependent on export industries. Canadian export volumes, however, turn out to give poor guidance to the relative dependence of various Canadian producing sectors. Comparing equal proportional changes in the economic activity of Canada and the United States, the smaller size of the Canadian economy condemns it to showing its well-known greater sensitivity. Were it not for the size difference, however, the shoe would be on the other foot: comparing equal absolute changes, the United States shows significantly greater sensitivity to Canadian activity.

A second section of R. J. Wonnacott's study explores a different feature of economic dependence—the sensitivity of the Canadian price level to external price increases. Interindustry models are less often called to answer this question and respond only subject to special assumptions. The Canadian economy might avert domestic effects of an external inflation by an adjustment of its flexible exchange rate. Without this adjustment, cost escalation and inflationary pressure on the prices of "international" goods will transmit some portion of the foreign inflation to the domestic cost of living. If the only influence on Canadian prices is through increases in the prices of international goods, a 10 per cent inflation abroad raises Canadian prices by 3.9 per cent; but if Canadian wages undergo a cost-of-living adjustment, the figure rises to 5.5 per cent.

"On the whole," concludes Paul Wonnacott, "the Canadian experience

with a flexible exchange rate has been a happy one." The Exchange Fund Account has operated properly by leaning against prevailing exchange-rate movements in most months. (It could, however, improve its performance by leaning more heavily as a cumulative change proceeds, rather than easing off as it has typically done.) Private short-term capital movements on balance have stabilized the balance of payments, both by moving counter to the sum of the current and long-term capital accounts and by tending to nudge the exchange rate toward its trend value. The exchange rate fluctuated over a range of 13 per cent in the years 1950-57 without visibly disrupting the flow of trade or long-term capital.

Flexible exchange rates, however, have not contributed much to the successful application of tools of domestic policy. The flexible rate created a great potential freedom for Canadian monetary policy, but this monetary freedom was not used to create monetary conditions significantly different from those in the United States. Exchange-rate movements in the 1950's might have aided the control of inflation in Canada by tending to worsen the current-account balance when inflationary pressures were strongest; in fact, they performed indifferently by this test. Paul Wonnacott is not dismayed by the mediocre performance of the fluctuating exchange rate in assisting domestic policies: the need for such assistance is clearly less than in times past.

The favorable verdict on Canada's fluctuating exchange rate does not portend equal success for the device in other countries. The study documents the continued functioning in the 1950's of the special mechanisms which tend to keep Canadian international payments and receipts in equilibrium. An increase in imports of investment goods still follows directly upon an inflow of long-term capital. There is strong support in the past decade's quarterly data for the relative-cycle hypothesis, which asserts that an increase in the growth rate of Canadian GNP relative to United States GNP tends to raise the flow of long-term capital to Canada. Since this increase also tends to deteriorate Canada's current account, the net result again equilibrates the Canadian balance of payments without any help from the exchange rate. Finally, there are such classic institutional features as the popular belief in parity between the American and Canadian dollars and the good gray conservatism of Canadian monetary policy to discourage destabilizing speculation.

Paul Wonnacott's study is an able and scholarly investigation of a complex pattern of policies, combining insight, good judgment, and a respect for the weaknesses of the available statistics. Many economists would have used formal statistical inference in dealing with these questions, however, rather than contenting themselves with a verbal analysis of charts and tables. Furthermore, the book presents a cluttered appearance from the author's effort to cover many topics in few pages and his inability to resist the temptation to detour into commentary on previously published research.

RICHARD E. CAVES

University of California, Berkeley

International Payments Imbalances and Need for Strengthening International Financial Arrangements. Hearings before the Subcommittee on International Exchange and Payments of the Joint Economic Committee, May 16, June 19-21, 1961. Washington: Superintendent of Documents, 1961. Pp. iii, 340. \$1.00.

Report of the Subcommittee on International Exchange and Payments of the Joint Economic Committee. Washington: Superintendent of Documents, 1961. Pp. 26.

These two publications of the Joint Economic Committee provide a relatively concise introduction to the nature and magnitude of the liquidity problem and the various proposals which have been advanced to cope with it. While they should prove useful to the nonspecialist who is interested in learning what the fuss is all about, students of international finance are not likely to find anything novel in them. For the most part, the papers presented by members of the academic community are a rehash of views already expressed on numerous occasions with little attempt either to answer criticism or to acknowledge, for comparative purposes, the existence of alternative proposals. The papers presented by government officials, on the other hand, are little more than rationalizations of actions taken (or not taken) to meet past crises.

The chief criticism that can be levelled against the papers and the Report is the general failure to examine the broader issues raised by the recurrent U.S. balance-of-payments deficits and the liquidity crisis. Professor Harry Johnson was one of the few contributors who even suggested the possibility of a flexible exchange rate system as a solution to these problems and he quickly backed away from a discussion of this solution with the remark that "it would amount to replacing the present international monetary system [and hence] that it lies outside the scope of the Subcommittee's inquiry" (*Hearings*, p. 173). One wonders whether this was a self-imposed constraint or one imposed by the subcommittee. Likewise, despite the overwhelming importance of the relationship between domestic fiscal and monetary policies and the outcome on the balance of payments, little systematic attention was devoted to it. In lieu of serious discussion of these and related problems, most contributors contented themselves with general statements concerning the need for international cooperation, of the necessity to limit the flows of hot capital, and of the desirability of increasing, by one means or another, the volume of international reserves.

The mediocre level of the papers read by the members of the academic community on what is generally regarded as one of the most important current economic issues raises a question as to whether the economics profession is taking one of its more important tasks seriously enough. This task is simply one of educating legislators on economic matters. The presentation of papers before Congressional committees is one of the chief ways by which this objective can be achieved. The failure to take advantage of the opportunity to deliver a paper before a Congressional committee constitutes a disservice both to the economics profession and to Congress.

ELLIOT ZUPNICK

The City University of New York

**Business Organization; Managerial Economics;
Marketing; Accounting**

The Firm: Micro-Economic Planning and Action. By NEIL W. CHAMBERLAIN. New York: McGraw-Hill, 1962. Pp. ix, 428. \$7.95.

The past year brought forth two significant books in which economists and a management scientist concern themselves intensely with accounting problems.¹ Chamberlain's new work may be interpreted as a manifestation that this converging trend towards the area of accountancy continues at present. The interest which a well-known economist shows here in the problem of *budgeting*, reflects the prominence to which this comparatively young branch of accounting has risen; it gives an inkling of the great expectations with which this discipline is generally regarded. It also is interesting to see this subject being treated from an unconventional viewpoint and being integrated into microeconomics. But we regret that the treatment relies exclusively on the descriptive, institutional approach and pays no attention to the analytical and mathematical tools for which planning and budgeting constitute a potential area of application. Such a methodological argument, however, lies almost beyond the range of criticism justifiable in a review; especially since Chamberlain's interest in budgeting arises not out of a theoretical consideration, or an evaluation of the future, but out of an "examination of the business unit at first hand, to see for one's self how it operates, to discuss with its managers why they do what they do, and try to hypothesize from what is found." The book thus represents an honest attempt at finding a more realistic approach to the theory of the firm than the one presently predominating. Whether such an empirical investigation (which relies partly on interviews with executives, partly on a questionnaire received from about 250 corporate officials, but primarily on accounting and management literature²) offers sufficient breadth and depth in a course of business economics is open to doubt. In most cases the material presented in the book will have to be supplemented by the conventional analytical tools of microeconomics. Since the book is not merely a text, but has reference character as well, its market will extend to general academic circles and the business world. It is written in a broad but pleasant and very readable style and contains a wealth of valuable information as well as stimulating ideas. One flaw is caused by the lack of expertness wherever subtle accounting competence is called for. This shortcoming leads, apart from terminological discrepancies, to an occasional superficiality and in one case to a definitely misleading sec-

¹ C. W. Churchman, *Prediction and Optimal Decision*, Englewood Cliffs 1961, esp. Ch. 3 and 13, and E. O. Edwards and P. W. Bell, *The Theory and Measurement of Business Income*, Berkeley 1961.

² It is interesting to note the literature on which Chamberlain's book is based: over half of the citations (in total more than 250) are based on accounting and budgeting literature (of which two thirds refer to publications of the National Association of Accountants, formerly N.A.C.A.) only about 10 per cent are based on literature of economics (including hearings before sub-committees and the author's previous work). The remaining quotations refer to general management literature (in which reports of the America Marketing Association, the *Controller*, etc., are repeatedly encountered).

tion: the presentation of the "flow of funds statement" in Chapter 2, reveals that the essence of the flow of funds approach as developed in business accounting has not been comprehended and Exhibit 4 which purports to depict this statement does not actually do so. The fundamental idea of specifying in the flow of funds statement the changes of *only long-term* (balance sheet) items—in order to show the sources and uses of the *global* balance of all short-term items (the changes of which *must* be articulated in a *separate* working capital schedule)—seems to this reviewer to have been completely missed.

The first five chapters prepare the setting by discussing the aspects of planning in relation to economics, various accounting statements and tools, the distinction between short-term and long-term planning and the reaction of actual practice to these plans, and, above all, the objectives of the firm and the planning process together with the alternative possibilities of measurement. Most of these and subsequent chapters are endowed with examples from actual practice (frequently even the names of the pertinent companies are quoted). This offers a rich and kaleidoscopic picture that supplies an insight into the planning activities of actual business in a concentrated form, hardly to be encountered elsewhere.

Chapters 6 to 10 (starting with the budgeting philosophy) deal with the various sub-budgets from the sales forecast to the production and expense budgets under incorporation of the pricing problem. What the author offers is not a mere listing or description of these budgets; he illuminates all these planning phases in a sparkling light that brings hundreds of aspects and details to the fore.

Chapters 11 to 15 are concerned with the coordination and reflection of the sub-budgets and their data in the projected operating statement, the capital budget, the projected balance sheet, the projected "flow of funds" (cash budget!) and the corporate plan as a whole. Thus the controllership function, the interdependence of the variables (if this expression may be used in connection with an institutional work) and the approximation-methodology form the undercurrent of these chapters which are no less richly endowed with illustrations from business life than the preceding parts of the book.

The remaining five chapters are organized around the problem of variances from standards and also contain the concluding summary. This part would have offered an opportunity for outlining systematically the distinction and relation between budgeting and standard costing, a problem that has not been perceived or at least not been articulated; the term standard costing or standard cost accounting does not even appear in the subject-matter index.

The trend towards accounting problems and the author's expressive conviction that instead of focusing exclusively on price decisions: "much is to be gained by reorienting micro analysis to the same interest in income flows, which characterizes national income (macro) analysis," and the book's closing sentence: "it seems likely that the budget (expressive of anticipations and intentions) may become as useful an analytical concept to economists in understanding the firm as it has proved a functional device to management in administering it" epitomizes the philosophy of the work under re-

view and gives reason for hope that economists begin to integrate accountancy into the mother-discipline. Thus the book will find acclaim among all those who wish to obtain an insight into the planning process of the firm as it is carried out in actual practice, who long for a description of the "is" instead of the "ought to be," who know to appreciate a sample out of economic life, even if it is difficult to determine how representative the sample is.

RICHARD V. MATTESSICH

University of California, Berkeley

Changes in the Location of Manufacturing in the United States Since 1929.

By VICTOR R. FUCHS. New Haven and London: Yale University Press, 1962. Pp. xxi, 566. \$10.00.

This is the first of a series of studies sponsored by the Committee on Analysis of Economic Census Data. This useful series is planned to contain further volumes on the industrial structure of large diversified firms, price-cost behavior in manufacturing, concentration in manufacturing, and the structure of retail and wholesale trade. Perhaps it will be possible, on future occasions, to reduce the time interval between a Census and the date of publication of such analyses.

The author of the present study has made two comparisons of Census data: 1929 with 1954, and 1947 with 1954. These comparisons fall under five headings: (a) extent and geographical direction of changes of manufacturing activity as a whole (Ch. 3, 4); (b) changes in the geographical distribution of industrial patterns (Ch. 5, 9); (c) relative changes in location of market-oriented industries and of labor-oriented industries (Ch. 6); (d) changes within the separate geographic divisions (Ch. 7); (e) changes by major industry groups and by industry (Ch. 8).

We must confine the following summary and discussion to the first three of these headings.

a. After surveying the changes that have taken place, the author presents measures of the area differentials in the rates of growth of manufacturing and segregates the part of these differentials which may be ascribed to differences between the areas in industrial structure. These adjusted differentials are found to be negatively correlated with the relative extent of unionization in the areas (but not with wage levels), with a climatic index, and with availability of building space, as measured by population density. The differentials are also correlated with shifts in population and income, but here causal relations run both ways and can only be examined on a less aggregated basis (see below under c). But we do want to note here the author's finding that net migration into the areas was strongly correlated with the relative wage levels (adjusted for industrial structure), for this runs counter to the slight importance some labor economists have attributed to wage differentials in explaining migration.

b. Under this heading we discuss what the author calls "industrial mobility." The term is unfortunate since, as he points out himself, an industry's geographical distribution changes far more often through differences in the industrial distribution of growth of industries than through physical move-

ment of plants or firms. The changes under this rubric are measured as the total of percentage gains in value added or employment of an industry for all states in which the relative shares of that industry increased (this must, of course, equal the sum of the percentage losses for all the states for which the relative share decreased). The author notes that these measures will necessarily increase with increasing relative fineness of industry classification. He is careful to take this and the possibility of spuriously high "mobility" measures for industries with low specialization ratios (due to Census practices of classifying multiproduct plants) into account in his analyses.

The "mobility" measures are negatively correlated with average hourly earnings in the different industries, possibly reflecting the pull of the large reserves of low wage labor in the South on industries using much unskilled labor. Creamer's finding for an earlier period that both the geographically highly concentrated industries and ubiquitous industries did not show much change in geographic distribution is confirmed by the author for subsequent periods.

"Mobility" is positively correlated with growth rates and the usual measure of concentration of ownership for the different industries. This latter relation has not been anticipated in the literature; rather the opposite has been asserted, namely, that monopolistic conditions, by not exercising such consistent pressures for economic location, may lead to less "mobility" than competitive conditions. It is not clear, however, that in general, when an industry grows, the most economical geographical pattern of new capacity is necessarily so different from that of the old capacity. (For some industries this is undoubtedly true, but the present discussion relates to "mobility" for manufacturing as a whole.) Moreover, a classification of industries by concentration of ownership is not coterminous with one according to degree of monopoly, for industries with widespread ownership often have highly localized markets in each of which there is a large degree of monopoly.

c. Market-oriented industries are here taken to be industries which are oriented to local (or sectional) consumer markets as well as their local suppliers. For such industries only can changes in geographic distribution be ascribed to changes in the extent, incomes or tastes of the local population. In 1954 these industries—the classification is still necessarily somewhat subjective—accounted for some 11 per cent of total employment in manufacturing. Some indication that the direction of causality runs from manufacturing activity to growth of income and population rather than in the reverse direction is offered by the finding that the correlations between per cent of comparative growth of industries on the one hand and of population and income on the other are practically the same for market-oriented industries as for others.

It is found that for labor-intensive industries the area differentials in growth of manufacturing had a much stronger (negative) correlation with the relative extent of unionization in the different areas than for other industries.

Half of the 300 pages of text consist of tables and these are backed up by some 240 pages of detailed appendix tables. In order to compile these the

author had access to data not found in the published Censuses. The volume will long remain indispensable to a varied array of research workers.

HENDRIK S. KONIJN

Yale University and The University of Sydney

Local Subsidies for Industry. By JOHN E. MOES. Chapel Hill: The University of North Carolina Press, 1962. Pp. viii, 252. \$6.00.

Professor Moes undertook, in the opinion of this reviewer, a difficult task when he decided to write his book. He ventured into a relatively unexplored area of economics which deals with subsidizing industry by organized efforts of small communities. His difficulties were magnified by the following two considerations; in the first place he expresses views and opinions, as he himself states, that have been condemned by almost all economists, tax experts, lawyers, and municipal officers. In the second place, he deals with facts and arrangements that in most cases have been extremely informal, confidential, sometimes secret, very frequently not authorized by law, and occasionally definitely illegal. Whether or not one agrees with Moes' views and analysis, one has to admit that he has presented his case in a convincing and lucid fashion and has made an interesting contribution to the rapidly growing science of regional economics.

The main thesis of Moes is that a community, when faced with local unemployment, should offer a subsidy in order to attract an industry to its area, and in this way to eliminate part or all of its unemployment. The community should, in Moes words, invest in buying an industrial payroll. Such a local subsidy would increase the community's income, would absorb its unemployed or underemployed men, and by doing so it would be beneficial and profitable not only to the community concerned but also to the economy as a whole.

Moes' presentation consists essentially of two parts; a theoretical analysis presented in Chapters 1, 6, 7, and 8, and an empirical and institutional review presented in Chapters 2, 3, 4, and 5 of his book.

In the analytical part of his study he states that local unemployment is due to the rigidities of wages. In many communities there are people who are unemployed because their marginal revenue product is below the prevailing wage rate. As wages cannot be locally lowered by an individual industrial entrepreneur who is in the process of deciding on a new location for his plant, a wedge between the entrepreneur's labor cost and the actual wages paid to the workers has to be driven. Subsidies provide this wedge. No matter what form subsidies will take (loans, grants of land or of buildings, tax exemption, lower tax assessment, provision of free utilities) essentially they always subsidize payroll. Subsidies should be granted in all cases where there is local unemployment, and should continue until the marginal cost of subsidies is equal to the marginal revenue in form of increased income of the community.

Quite rightly Moes points out (Ch. 7) that the benefits from a subsidy that accrue to a community are not limited to the amount of the actual pay-

roll that a newly established industry disburses to its workers. The spending of this payroll by the workers will produce a multiplied effect upon the community's income, and this total effect should be considered in evaluating the benefits resulting from a subsidy. After devoting a whole chapter to the analysis of this local multiplier, and after presenting a rather convincing case for this type of analysis, Moes rather unexpectedly and surprisingly concludes his chapter by saying that "The multiplier approach is not very suitable to carry this analysis further. . . ."

In the last chapter of his book Moes combines his abstract analytical approach from the preceding three chapters with some realistic empirical observations. He believes that "gains from subsidizing industry rest on the inefficiency of resources allocation which unemployment implies" (p. 172). The process of competitive subsidizing by various communities would eliminate the existing imperfections of the markets and would lead to a more optimum allocation of resources, especially of labor, and by doing so, it would bring the whole economy closer to the optimum postulated by a perfectly competitive model. In his opinion subsidies would not, and should not, lead to the reallocation of existing plants; they should only influence the location of new plants. Thus "competitive subsidies in the absence of growth would contribute very little to the economy at large" (p. 179).

Most of his cases described in the empirical chapters refer to the South and deal with the efforts to eliminate disguised unemployment which so frequently prevails in agriculture in that part of the country. He describes the attempts of various private and public agencies to attract industry to a particular locality by offering a variety of financial inducements to entrepreneurs who are contemplating a new location for their plants. In the final analysis Moes reaches the following conclusions: (1) any community faced with unemployment could and should solve the problem of unemployment by attracting new industry, (2) in most cases a very small amount of subsidy would produce a very substantial increase in the total income of the community, (in Appendix V he shows figures that indicate that the rate of return on subsidies amounts frequently to 500 per cent or more per annum), (3) the legal status of using public funds for a subsidy of a private industry remains very doubtful and ambiguous (in many states it is clearly illegal to use public funds for such a purpose), (4) at the moment not enough effort is being made to locally subsidize industry, in spite of great successes in those cases where subsidies were used, (5) subsidies should be made by local governments and not by state governments, (6) economists should concentrate more on advising local governments rather than the federal government.

Moes' line of argument is based fundamentally on the assumption (sometimes explicit, sometimes implicit) that the labor force is, and should remain immobile, and that each worker has a "right" to expect to find employment in the community where he wishes to live. Such an assumption is very one-sided and it seems to ignore the fact that mobility of labor has been greatly responsible for the tremendous economic growth of our country, especially in the past century. Moes believes that industry today should move to labor instead of labor moving towards industry. Does he fully realize the long-run consequences of such a policy? Would not such a policy eventually lead

to all sorts of rigidities in our industrial structure and would it not result in an inefficient allocation of resources? Moes never considers the possibility that subsidizing geographical and occupational mobility of labor (as it is done with such a great success in some Scandinavian countries) could lead, maybe, to better results than the subsidizing of industry.

There is one omission in his book that is rather puzzling. Although most of the discussion centers on the South and most of his examples are taken from the South, the question of the racial problem is never raised, and the word Negro is not mentioned even once. Surely, Moes should be aware that a great deal of the economic backwardness and lack of industrialization in the South results to a large extent from racial tensions, and from a social structure that is based on racial segregation and discrimination. It has been stated by so many writers that a country, or an area, in order to have economic progress has to stimulate also social reforms. Moes chose, however, to ignore this question completely.

In his introductory remarks Moes mentions that in spite of the fact that he will discuss examples primarily from the South, he believes, nevertheless, that his conclusions would apply also to the problems of unemployment or underemployment in undeveloped countries in Asia and Africa. This is a rather bold statement, and it would be most interesting if Moes had pursued this question further. Unfortunately no mention of it is made in the latter part of the book. In the opinion of his reviewer, the problems of those undeveloped countries are frequently of a totally different nature than the problem of the backwardness of the South. It is most doubtful that local subsidies would help very much in Asia or in Africa.

In conclusion, Moes believes that local subsidies are politically feasible, socially desirable, and economically advantageous, and should be employed on a larger scale than they have been so far. Being a strong believer in a free enterprise system, Moes is against any effort to subsidize industry on the federal or state level; he is also very doubtful about the benefits that the minimum wage law or labor unions may bring. He is all in favor of keeping the wage differential between the South and the North as wide as possible.

Moes provides an excellent documentation for his statements, especially for opinions that are critical of his views; there is an abundance of footnotes, and the bibliography and index are very good indeed. Even if one does not accept all of Moes' assertions, one has to admit that he has written an interesting book on a very controversial subject, and has made a valuable contribution to a somewhat unexplored field of economics and political science. His courage in stating views that are contrary to generally accepted opinions has to be admired.

ANDRE SIMMONS

University of Nevada

Economia d' azienda. By PIETRO ONIDA. Turin: UTET, 1960. Pp. xx, 790.

This is the ninth in a series of 20 volumes in process of publication under the joint direction of Professor Gustavo Del Vecchio of the University of Bologna and Professor Celestino Arena of the University of Rome. The completed series, entitled *Trattato Italiano di Economia*, is intended to consti-

tute an integrated treatment of all the fields of economics. In *Economia d'azienda*, Professor Pietro Onida was assigned the task of synthesizing the abstract theory of the firm with the techniques of business administration: admittedly an ambitious undertaking.

Economia d'azienda is a fairly complete survey of business administration divided into two parts. Part I, consisting of three lengthy chapters and taking up well over one half of the work, is primarily descriptive in nature and deals with the normative aspects of the organization and administration of the firm. In Part II, consisting of six chapters, the author proposes to analyze the economics of the firm in terms of "quantitative accounting and statistical measurements."

Every firm is faced with the problem of decision-making based upon the alternative choices with which it is confronted. This proposition is stated as a fact and constitutes the basic assumption upon which the entire analysis rests. The principle of alternative choices of action is developed in the first chapter which concerns itself with the problem of means and ends. Here we find that the firm is a continuum in time and space independent of its components at any instant of time. The firm, according to Onida, is more than the sum of its parts. The components of the firm, which taken all together constitute the entrepreneurial function, consist of the administrative personnel, the labor force, the financial structure of the firm, the inputs and outputs as well as the legal form of organization. The author insists that every aspect of the business enterprise must be analyzed as a part of the whole, which is both quantitatively and qualitatively different from the sum of the parts. In his own words, "it is a fruitless pretension to attempt the study of the economic significance of administrative decisions and operations while ignoring the firm as a complex, dynamic, economic entity." Therefore, we are told that we cannot hold constant all other factors except the one under observation, since any change which takes place in any one of the factors enumerated previously, must of necessity involve changes in all the constituent elements of the firm. The method of partial analysis gives erroneous results. "When a number of factors, mutually complementary, produce a given total product, . . . it is not possible to determine the portion of [the total] product which is specifically attributable . . . to each factor" (p. 79). Therefore the sum of the marginal products does not consume the total product. This is based on the assumption that the factors of production, which are defined very broadly and inclusively, are heterogeneous and the production function does not show constant returns to scale. These assumptions, however, are not explicitly stated as such, except that the author makes constant reference throughout the work to the heterogeneity of the firm and occasional references to increasing and decreasing costs as scale changes occur within the firm. The author deals now with the short run, now with the long run, blending the two together as he goes along, as a result of which the analysis is anything but rigorous. At any rate, the principle of marginal productivity is conveniently disposed of on the grounds of the statement cited above. This would appear all the more puzzling in the light of the proposal to apply the principle of alternative choices to every decision-making problem with which the firm is

confronted, for certainly we would expect that there is a maximization problem in the sales decision, for example, a cost-minimization productivity-maximization problem in the input-output decision, and in terms of financial structure, some kind of target optimum. Relax, dear reader; for the firm of "concrete reality" there is no maximization and no minimization. There are merely convenient targets which the firm shoots at, and apparently, hopes sometimes to hit. Perhaps this explains why the principle of alternative choices is expressed as the "principle of the convenient choices of the firm." To this reader it is not clear what, if anything, is being maximized or what this "convenience" really is.

Furthermore, in view of the stated assumption that a decision of the firm to make a change in one of its factors, e.g., labor, necessitates making decisions respecting changes in all the other factors, we would expect the author to apply a general equilibrium analysis to the solution of this problem. But since we are dealing with the "concrete reality" and not the firm of "theoretical abstractions," the business enterprise is never in an equilibrium position nor does it ever tend toward an equilibrium position. As an attempt to apply the tool kit of economic theory to the analysis of administrative and organizational problems, *Economia d' Azienda* fails to do the job.

ANTHONY L. SANCETTA

The College of William and Mary

Industrial Organization; Government and Business; Industry Studies

A Study in Econometrics: The Demand for Electricity in the United States.

By FRANKLIN M. FISHER IN ASSOCIATION WITH CARL KAYSSEN. Amsterdam: North-Holland Publishing Company, 1962. Pp. xvi, 190. \$5.00.

This study, undertaken for the General Electric Corporation, was "designed to show what modern econometric methods could contribute to the understanding of the forces shaping the demand for electricity." Demand for electricity is studied in four parts, namely, short- and long-run household demand and industry demand with constant and changing technology. For household demand, annual data by states, 1934-41 and 1947-56, are employed while for industry demand, cross-section data by states for two-digit manufacturing industries, 1947 and 1956, and for extractive industries, 1954, serve as inputs. Multiple regression and covariance analysis are the main techniques employed.

The findings, indicated in part below, represent a rich and imaginative harvest. However they are put forward in a highly qualified and tentative manner because the authors are keenly aware of and comment cogently on data deficiencies, aggregation problems, estimation problems, and possible inadequacies of the models they estimate. Nevertheless, it is this reviewer's opinion that the study will be an essential point of departure for further work on the demand for electricity.

Short-run household demand, conceived as demand for electricity holding constant the stock of electricity-using equipment, is found to be characterized

by (a) price elasticities close to zero for "older" and more "mature" states and much higher, though less than one, for "younger" states and (b) income elasticities well below one, positively correlated with degree of urbanization and zero or negative for rural states. On the other hand, household long-run demand, the determinants of which are identified with factors determining the demand for electricity-using equipment (annual estimates of consumers' stocks of seven major appliances by state, 1944-57, are presented and discussed in Chapter 2), is found to depend not on the price of electricity but mainly on current income, long-run income (Friedman's permanent income series), number of wired households, population, other demographic variables, and to a small extent, on the prices of appliances. The main conclusions drawn from these results are that as all states mature, short-run demand will become even less sensitive to the price of electricity than it now is and more sensitive to income. As regards long-run demand, "The unimportance, in general, of price of electricity and prices of appliances means that substitution effects which might sustain a more rapid growth [of electricity demand] are unimportant."

Analysis of cross-section data for 1956 with observations by industry and state, yields an upper limit to the price elasticity of industrial demand which "is somewhat greater than unity in six of the ten industries (highest 2.6, for the chemicals industry), unity or less in two more and zero in the remaining two. . . ." Similar results are obtained for extractive industries. "Altogether, there is reason to expect a fairly high degree of sensitivity to electricity price in industrial demand given the technology of 1956."

A study of changes in electricity input coefficients for 1947 and 1956, demonstrated that industries in which the cost of electric power is a high proportion of total costs experienced smaller percentage increases in their coefficients than did industries for which electric power costs were less important. With allowance made for the effects of a fall in the price of electricity, the same tendency is noted; however, whereas without the correction 17 of 20 industries showed an increase in electricity input coefficients, the correction resulted in just 5 of 10 industries showing an increase. It is then concluded that "technological change probably acted neutrally or increased the importance of electricity—the quantity of electricity consumed per unit of output—in this period."

Some points which may deserve attention in future work follow. The Fisher-Kaysen short-run household demand function has electricity consumption dependent on current income, price of electricity, and the total stock of electricity-using equipment. Since no data are available for the stock variable, it is assumed that its first differenced logarithm is a constant, that is that the stock grows at a constant percentage rate. Thus the short-run results are critically dependent on, among other things, the appropriateness of an assumed constant growth rate and the use of current income. To the extent that departures from a constant growth rate for the stock exist, either in terms of short-run fluctuations which are correlated with income and/or price or in terms of an incorrect specification of the underlying trend function, a source of bias is present. Moreover, use of current income rather than "normal" or "permanent" income *may* tend to bias income elasticities downward, with

variable income states (probably rural states) having the largest downward bias. Could this account for the observed zero or negative income elasticities obtained for rural states? Or should we accept the authors' hypotheses that for rural states income increases (decreases) lead to more (fewer) activities outside the home and more (less) out-of-state migration and hence less (more) electricity consumption? Further, in connection with long-run appliance demand, consideration should be given to possible biases, particularly downward ones arising from the use of appliances' wholesale rather than retail prices (data for the latter were not available). Lastly, the authors' reservations and dissatisfactions with the Neyman-Pearson system of inference, which is dogma for many practicing econometricians, as well as their excellent treatment of many other econometric issues, deserve close attention and study.

In conclusion, Fisher and Kaysen, in a workmanlike fashion and with econometric sophistication, present an intriguing exploration of many aspects of the demand for electricity. It seems unquestionable that this work will be required reading for anyone who wishes to discuss the demand for electricity and the many public and private issues involving it in an informed and up-to-date manner.

ARNOLD ZELLNER

University of Wisconsin

Pricing Power and the Public Interest. By GARDNER C. MEANS. New York: Harper & Bros., 1962. Pp. xxi, 359. \$7.50.

In this book, based largely on the steel industry, Means advances the bold thesis that large corporations should be considered semipublic institutions whose management would be rewarded by liberal bonuses based upon "economic performance in the public interest." Standards would give only limited recognition to the attainment of profits and would be established by accountants, engineers, economists and professional management consultants. The book is obviously directed to an informed lay audience but professional economists can read it with profit without accepting all the conclusions or the proposed remedies.

The first 150 pages are given to an analysis of steel pricing from 1942 to 1958 in which the author concludes that the major responsibility for the rise in steel prices, particularly after 1953, must rest with the industry rather than with labor. Prices in the industry, as well as in other industries, are assumed to be administered, but unlike many other critics, Means sees little to be gained and much to be lost by the atomization of the industry. Marginalism is thought to be inapplicable and target pricing as depicted by Lanzillotti and others is assumed to be normal. Target pricing is not regarded as undesirable but is thought to be necessary administratively and desirable if coupled with the cost of capital. In other words, the target price would include a mark-up limited to an amount which would give the firm a rate of return on its capital equivalent to the cost of that capital for some relevant period.

Management motivated by the objective of balancing the best interests of stockholders, employees, consumers and the general public is accepted if not as a fact at least as an emerging practice that has hopeful overtones. The di-

forcement of ownership and control of corporate enterprise is pushed to what Means regards as its logical end where the rewards of enterprise will go to management through liberal, tax-exempt bonuses rather than to stockholders. Stockholders would be restricted to returns equivalent to the cost of capital computed in somewhat the same way as they are for purposes of public utility regulation.

Means combines in striking and original fashion a number of institutions into a suggested pattern of industrial self government. This is an outstanding achievement. The difficulties of applying the cost of capital approach to the determination of the target rate of return may have been underestimated and a disservice is done to the thesis by linking the steel industry to the utility industry. The cost of capital for regulatory purposes can be broadly defined as a rate of profit sufficient to maintain the market value of the utility's securities equal to the amount invested. Certainly it is not an unreasonable standard. In the period from 1942 to 1954 steel stocks generally sold at prices far below book values and the application of cost-of-capital principles would have resulted in increased prices and profits rather than the converse. In the period from 1954 to 1958 steel stocks sold at premiums over book value, but not to the extent that gas and electric utility stocks did and regulation as practiced would have raised further the prices of an industry already presumed to be contributing to inflation.

Such relationships may or may not be unavoidable snares for the unwary in the determination of some practicable concept of the cost of capital, but if this pitfall is avoided there are a hundred more to entrap the administrator. To what extent does inflation, or deflation, contribute to the cost of capital? How is the factor of uncertainty, in Knight's use of the term, to be evaluated to say nothing of the more ordinary run of risks? The problem is not made easier by the mutual contribution of both management and regulation to the creation of these self-same risks. Is Means justified in his more or less casual assignment of a large portion of profits to management? Even more basic is the problem of the allocation between customers and stockholders of the costs of excess capacity in periods of slack demand. Under regulation these costs would be born in large measure by the customers; under conditions of competition they would be born by the stockholders. Would it be feasible to raise prices by administrative fiat in periods of falling demand to maintain earnings equivalent to the cost of capital?

If it is conceded that regulation has worked with a degree of effectiveness does it follow that the methods, concepts and objectives can be transferred in any significant manner from a limited segment of the economy to an economy of large corporation which together make up the bulk of the private enterprise system? On an administrative level can accountants, engineers, managers and economists be found upon whose judgment we can rely? How long would it be before the lawyers took over? Can we expect the emergence of any real standards of "economic performance in the public interest" when these same standards have been subject to controversy for almost three quarters of a century of the Sherman Act?

Such reservations as these are not necessarily fatal and in such a book as

this must be proportional in number to the originality and significance of its content. The book is more than thought provoking; it is an outstanding contribution and ahead of its time. It may well set in motion forces that will ultimately benefit our society. Those of us, who like Means, hope for the development of a spirit of public motivation in corporate enterprise, will hope that the obstacles will not be insurmountable.

E. W. CLEMENS

University of Maryland

Antitrust and the Changing Corporation. By WILLIAM LEE BALDWIN. Durham: Duke University Press, 1961. Pp. vi, 307. \$8.75.

This work, according to its author, attempts to record the viewpoints towards the large firm in the American economy as expressed in the "literature, public debate, and legal developments since the end of the 19th century, with emphasis on the influence of economists upon policy makers and the courts." Such a review, in Mr. Baldwin's opinion, makes possible an appraisal of the "usefulness of present-day economics as a guide to proper enforcement of those portions of the nation's antitrust laws which deal with the large business organization."

The work is organized into seven chapters, the last containing the author's conclusions. Essentially, these chapters review the literature relating to the large corporation in the pre-first World War period (Ch. 1); in the period between the first World War and the depression (Ch. 2); in the 30's and during the second World War (Ch. 3); and during the postwar period (Ch. 4, 5 and 6).

Chapters 1 and 2 contain fairly complete summaries of the literature of the time; while they add little to existing knowledge, and in fact often represent summaries of other students' analyses of the primary source materials,¹ there is little to which one would take exception. Thus, for the scholar wishing to refresh himself on the early arguments concerning the economies to be realized from the trust movement, Baldwin's summaries of the works of Eliot Jones, A. S. Dewing and Shaw Livermore might be convenient.

In Chapter 3 Baldwin begins to interject into his summaries various questionable statements of opinion about the value of the works examined. The pioneering study of Messrs. Berle and Means (*The Modern Corporation and Private Property*, 1932) is described as one which, while popularizing statistical measures which served as models for later empirical studies, "reflected near-hysteria" (p. 77); Clair Wilcox's T.N.E.C. Monograph 21 is described as "a brief and clear exposition of various market categories recognized in price theory, despite a barrage of terms such as 'oligoposony' and 'duoposony' and his somewhat pedantic distinctions between pure and perfect competition and between imperfect and monopolistic competition" (p. 103). In fact—perhaps because of his feeling that, "Many of the scholars who wrote

¹ Baldwin's discussion of the early development of the antitrust laws admittedly draws heavily on those of J. B. Clark, Oswald Knauth, L. Letwin and Hans B. Thorelli (see page 25). References to senatorial debates on the Sherman Act are generally not to the transcript of those debates but to citations of those debates by other authors.

the T.N.E.C. Monographs evinced a lack of faith in the competitive process"—Baldwin presents rather harsh judgments of the work of the Committee and of its monograph authors. The authors of Monograph 22 (L. L. Lorwin, J. N. Blair, and Ruth Aull) are chastized for not attempting to estimate quantitatively the degree to which technological unemployment was responsible for the depression (p. 106); the studies of Walton Hamilton (Monograph 31) and Myron Watkins (Monograph 13) are characterized in the following language (p. 108):

Nowhere is there any indication that there might be a necessity for the stimulation or encouragement of research activities, or that the problem was anything other than that of effectively utilizing a stream of inventiveness whose source was not investigated but whose continued abundance was presumed unless it was choked off by monopoly.

And T. J. Kreps' Monograph 7 (*Measurement of the Social Performance of Business*) is criticized for containing no effort at empirical validation of the observation that competitive industries are generally characterized by fuller utilization of capacity than are concentrated industries (p. 113). In sum, the author concludes that "the indictments made [by the T.N.E.C.] were weak and were unsubstantiated by the voluminous statistical material presented" (p. 110). Further, the economists working with the T.N.E.C. are accused of placing "only minor emphasis on the product-market effects of monopoly," while devoting much attention to the role of big business in the depression of the period (p. 110).

In this reviewer's judgment Baldwin's attacks are not well-founded. It is easy to attack Kreps, for example, for not providing empirical validation of his thesis, Wilcox for attempting to make "somewhat pedantic distinctions," and Berle and Means for "near-hysteria." Yet, this reviewer would be inclined to wonder *how*, almost a quarter of a century after Kreps' work appeared, Baldwin would go about empirical validation of the thesis that concentrated industries, e.g., steel, operate at lower rates of capacity than do nonconcentrated industries, e.g., textiles. And he would point out that the distinctions made by Wilcox were apparently not sufficiently sharp to satisfy other critics.²

It is also unclear how the work of the T.N.E.C. can be criticized for placing "minor emphasis on the product-market effects of monopoly" when the thrust of the analysis of the patent problem, for example, was directed precisely at the impact of the patent laws on product markets. Finally, dismissal of the results of the T.N.E.C. as "a failure of economic analysis to influence public policy" (p. 114) seems unwarranted. The Committee's investigations of the oil industry certainly affected subsequent policy toward the integrated companies and resulted in having crude oil pipelines declared common carriers, a move which increased the level of competition in the gasoline markets in the Midwest. Also, the problem of the cartelization of the glass container industry by the Hartford Empire Company was dramatized, as an almost direct result of which the Hartford Empire case was instituted; and Monograph 43 (*The Motion Picture Industry—Pattern of Control*) pointed

² See G. J. Stigler, "The Extent and Bases of Monopoly," *Am. Econ. Rev.*, No. 2, Part 2, June 1942, 32 (Pt. 2), 3, n. 5.

to the problems created by block-booking of motion pictures, problems solved shortly after the Second World War by a series of antitrust cases.

One final criticism is, perhaps, in order. There are a few important omissions from Baldwin's survey of the literature which should be noted. Despite apparent concurrence in their conclusions, Baldwin fails to mention the study of the antitrust laws by Dirlam and Kahn;³ his discussions of economists' contribution to the formulation of antitrust policy and to the ascertainment of the impact of the laws neglects Simon Whitney's two-volume study;⁴ the discussion of Galbraith's concept of countervailing power—described as "the most significant and influential work to be produced in the postwar period in this area of re-examination of the operation of a competitive mechanism" (p. 167) nowhere considers the points raised by Whitney in his review.⁵ And, returning once more to Baldwin's evaluation of the Temporary National Economic Committee, no citation is provided to the *Supplement* to the June 1942 *American Economic Review* dealing with the work of the Committee.⁶

IRWIN M. STELZER

National Economic Research Associates Inc.
New York City

³ J. B. Dirlam and A. E. Kahn, *Fair Competition: The Law and Economics of Antitrust Policy*, Ithaca 1952.

⁴ S. N. Whitney, *Antitrust Policies: American Experience in Twenty Industries*, New York 1958.

⁵ S. N. Whitney, "Errors in the Concept of Countervailing Power," *Jour. Bus. University of Chicago*, Oct. 1953, 26, 238-53.

⁶ *American Economic Review*, Suppl., *Papers Relating to the Temporary National Economic Committee*, June 1942, 32 (2), Pt. 2. This supplement contains interesting papers by G. J. Stigler, M. M. Bober, Moses Abramovitz and M. W. Watkins.

National Transportation Policy; Report of the Special Study Group on Transportation Policies in the United States. U. S. Senate, Committee on Commerce, Report No. 445, 87th Congress, 1st Session. Washington: Superintendent of Documents, 1961. Pp. 732. \$2.00.

This report is one of the latest of the ever-growing series of studies of transportation problems in the United States. The document has become known as the Doyle Report, after Major General John P. Doyle, U.S.A.F., retired, director of the special study group which prepared it. Over 20 professional staff members, an advisory council, and *ad hoc* committees of representatives of various transport trade associations participated in the study group.

Appearing first on the Senate's list of problems to be examined in the study is "the need for regulation of transportation under present-day conditions and, if there is a need for regulation, the type and character of that regulation." The Doyle Report's conclusions are controversial and clash directly with those reached in another recent official study.

... exception is taken here to the emphasis which is placed in the Department of Commerce recommendations on freedom to compete [*Federal Transportation Policy and Program*, Washington 1960]. For if rate policy stresses freedom to compete a [sic] serious paradox is created with regard to the broad long-range objectives of national transportation policy. How

can freedom to compete in ratemaking be reconciled with the objective of insuring a proper structure for the transportation industry? (P. 432.)

Frequent mention of "destructive" and "cutthroat" competition throughout the report emphasizes the conclusion that increased control rather than increased competition should be relied upon to allocate transport resources. The argument for extending control is based upon the prospects of further decline in the relative position of common carriers in the nation's transportation network. "We frankly face a shift from a private public carrier-based transport system to a private and exempt carrier-based system along with the prospect of Government-owned railroad industry" (p. 85). Policies must be adopted to reverse this trend, for "ownership or operation of carriers by the Federal Government is to be avoided," (p. 32) and "all evidence points to the national necessity of preserving common carriage as the only means of providing the general transportation service needed by all" (p. 33).

With these assumptions as background, the report examines many of the current problems of the transport industry and its regulation. It recommends a major overhaul of federal machinery affecting transport with a single regulatory commission to replace the Civil Aeronautics Board, Interstate Commerce Commission, and Federal Maritime Board; establishment of a cabinet-level Department of Transportation; and all federal transport laws as uniform as possible and in a single statute. Much more important to resource allocation is the proposal that the regulatory agency require rates to be set at long-run marginal cost, a cost concept having "a well-defined technical economic meaning" (p. 410). Other matters receiving detailed treatment include the transportation system's role in national defense, private and exempt carriage, railroad passenger service, urban transport, transport needs of rural areas, railroad consolidation, common ownership of different modes of transport, and the freight car shortage.

Unfortunately, and perhaps unavoidably, the report leaves many questions unanswered. If a present trend toward government ownership of railroads is identified, is it possible that it is later than the authors think, and, therefore, that preparation should be made for such an eventuality? Does the long run marginal cost pricing formula yield sufficiently clear welfare implications to warrant its use as *the* guide by which transport price should be set? Why abhor government ownership or operation of railroads and yet propose a long run marginal cost criterion which would eliminate managerial discretion regarding price? Without placing restrictions on the right to private transport, how will it be possible to develop regulation which will permit common carriers to stem the tide of private carriage, and at the same time avoid "ruinous" competition? Can common carriers win the battle against private transport without becoming so highly specialized that they will no longer be able to provide transport services required by small shippers? Would a super-commission dealing with all transport merely compound the present defects of commission regulation?

The mass of descriptive and statistical material on the myriad features of U.S. transportation scattered throughout the Doyle Report's 732 pages makes it a useful reference work. (It is a shame that the report is not indexed, though there is a detailed table of contents and an excellent summary chapter.) The

authors' outspoken positions on many issues are thought-provoking and make familiarity with this work a must for those interested in transport policy.

LARKIN WARNER

Oklahoma State University

Horizontale Karteller. By PREBEN MUNTHE. Oslo: Universitetsforlaget, 1961. Pp. 172.

In this stimulating book, Professor Munthe contributes to the understanding of the price and output decisions of cartels and of the behavior of member firms. The author is searching for tools with which to analyze production and price problems as he sees them, and in the process he experiments with an array of microeconomic models ranging from perfect competition to monopoly.

Since Munthe is interested in actual markets he adjusts his assumptions and uses his kit of analytical tools to solve the problems as they arise. A few of the market situations are peculiar to Norway. The discussion of what he calls "decentralized" markets is interesting as an explanation of practices in the fishing industry and agriculture in Norway. The objective of each producer is assumed to be to maximize profits in the short run. The cartel as a monopsony generally will not control the quantities supplied by each producer. If there is extensive competition from the cartel's customers, the price will be the same with or without a cartel. However, there is not necessarily much competition on the demand side. For instance, the various buyers may utilize the product for different purposes or the buyers may be few and far apart geographically. Under such conditions the cartel acts as a central export agency and may be able to establish a discriminating monopoly. A bilateral monopoly may also develop between the export agency and the foreign buyer, in which case price will depend upon the bargaining strength of each party.

In a later chapter Munthe analyzes whether a duopolist or oligopolist will try to maximize profits over a short or a long period of time. In this section he draws on papers published by Hicks, Hahn, Lydall and Ahmad in *Oxford Economic Papers* between 1954 and 1958. While in any type of business organization there is the tendency to stress the near future more than the distant future, there is more stress on the future build-up of profits in the typical duopoly or oligopoly market than in the "decentralized" market.

The last chapter, titled "Partial Cartels," deals with collusive agreements which may cover selling price or market allocation but leaves open rivalry on matters not covered. In effect, the collusive agreement covering selling price will turn into a full cartel including not only uniform price, but output quotas, market allocation, product development and other matters of concern to the industry. The formally organized full cartel is rare, however, because of anti-trust legislation.

From the standpoints of method and conciseness of presentation, this is one of the best studies in the application of microeconomic analysis to a series of price and output problems which has come to this reviewer's attention.

FINN B. JENSEN

Lehigh University

Land Economics; Agricultural Economics; Economic Geography; Housing

Tratado de economía agrícola. By EDMUNDO FLORES. Mexico: Fondo de Cultura Económica, 1961. Pp. 442. Mex. \$40.

The author, professor of agricultural economics at the Escuela Nacional de Economía Agrícola at Chapingo, Mexico, has written this text for Latin American students in the belief that agricultural development is a necessary condition for further economic growth in practically all Latin American countries and that available literature in Spanish is both scarce and of poor quality. His main criticism is that most Latin American authors unthinkingly attempt to follow the theories, attitudes and prejudices of European and North American economists despite their manifest unsuitability for analyzing the economic problems of Latin American societies. In characteristically unmutated tones, Flores marks off the grounds for Latin rejection of prevailing Anglo-Saxon economic thought patterns—which should interest American economists.

The work is a rather strange compendium grouped in four books of from three to seven chapters each. The first book contains chapters dealing with agriculture, economics, and development. About 75 pages are devoted to an introduction to the literature on economic growth (Myrdal, Nurkse, Rostow, Marx, Gerschenkron) and the relation between agricultural development and economic growth. Perhaps by way of demonstrating the justice of his strictures against neoclassical theory, 45 pages are devoted to a lucid translation of the ideas of demand and supply schedules, elasticities, the production and consumption functions, the cobweb theorem, the terms of trade between producers of primary and secondary products, parity prices, the national distribution of income and the formation of capital. Stigler, Walras, Knight, Marshall, Schumpeter and Schultz constitute a small sample of the authors cited. The translation of neoclassical economic theory from English into Spanish is like separating base metal and gold in an alloy. For us the gold consists in the value judgments embedded in the original constructs but it disappears when the English words are translated into a language whose value connotations are very different. It is this which encourages Latin Americans to think that *gringos* confuse gold with dross.

Book 2 (165 pages) is devoted to resources and space: to making such points as that the use to which resources are put is conditioned both by the distribution of ownership of capital and the distribution of income; to delineating the location of agricultural production in Mexico; to analyzing urban growth, discussing the milkshed of the Federal District, and delving into the economics of forestry.

It is Book 3 which ought to be made available in English. The subject is agrarian reform. The destruction of the indigenous society by the conquistadores; the development of the *latifundio*; the odious role of the foreign-controlled plantation; and the invention of the *Ejido* are chronicled with honest fervor. One is reminded that Latins do not find it necessary to pretend that

their academic writing is above politics. In Chapter 14, "The Plantation," Flores argues

One cannot suppose thus that the propaganda of the United Fruit is destined to improve relations between the Company and the people who produce bananas. Rather its purpose is to reaffirm the confidence of the North American public in its institutions and business. Thus each time that United Fruit has difficulties in its colonial dependencies one can be sure that public opinion in the United States will absolve the Company by virtue of the curious but sure psychological mechanism of attributing frictions between the Company and the country involved not as problems of salaries, prices, concessions and so on, but as a conspiracy fomented by Communists . . . Under these conditions, any political, economic or social reform, however mild, awakens fears and is immediately considered as a dangerous precedent.

In accordance with this form of manipulating North American public opinion and of interpreting the news, any policy destined to remove the Latin American people from the humiliating state of poverty in which they live under the colonial regimes of monoculture, will have to be postponed until the North Americans win the cold war—or lose it. Thus as long as that day does not arrive, the security of the continent and the security of United Fruit are the same thing.

The message for Latin American students, clearly set out in Book 4, is that Mexico, Bolivia and Cuba have shown the way. It is to be hoped that other countries can consolidate their gains from revolution more rapidly. Mexico, it is argued, can now accelerate her rate of growth by rapidly completing her agrarian reform, consolidating hopelessly small properties, forcing industrialization and reducing the percentage of the labor force in agriculture, making increased use of foreign trade, stepping up research, technical education and expanding agricultural extension work.

Today, the factor responsible for the poverty of the majority of Mexicans—notwithstanding the spectacular rates of development—is the squandering of human resources, which is manifested principally by chronic unemployment for a considerable sector of the population, by a great mobility of labor, and by the very low levels of productivity in the majority of activities.

This critical problem must be conceived as a function of the level of employment and income. Seen in this way, it is the responsibility of the State to see that the unemployed have work and are paid a minimum income sufficient to satisfy their basic necessities for food, shelter, clothing, and education. As a counterpart of this policy of redistribution and as a fundamental requisite to sustain it, it is also the responsibility of the State to introduce those innovations which by augmenting the efficiency and capacity of the productive apparatus, redound in an increasing rate of growth of the national income.

To secure the foregoing, it is necessary to put into play all the resources of planning, both at the macroeconomic and at the regional level. Public and private investment, fiscal and monetary policy, foreign trade policy,

and the preparation of technicians at all levels must be reoriented and coordinated to obtain the highest possible rates of capital formation.

One comes away with the distinct feeling that—one way or another—Professor Flores is going to be instructing the *gringos* for a long time to come.

J. O. BRAY

*Food Research Institute
Stanford University*

Labor Economics

Labor Economics. By CHESTER A. MORGAN. Homewood, Illinois: The Dorsey Press, Inc. 1962. Pp. xii, 657. \$8.00.

Professor Morgan presents a frankly institutional text book for what he sees as a "one-semester course in labor economics or labor problems." It would be equally good for a one-quarter course. Although he assumes that his organization of the material is "somewhat unorthodox," it seems to fit the traditional pattern. Without undue verbiage he presents the major topics typical of post Wagner-Act labor economics text books. Writers in the labor economics field seem unaware of the considerable overlap in text books for Labor and Personnel courses. Workers in the labor economics vineyard seem relatively untouched by the human relations approach but text writers in the managerial traditions seem, recently, to be markedly influenced by the inter-disciplinary concepts from the burgeoning area of the behavioral sciences.

The Morgan text groups 20 chapters into five parts: (I) Introductory; (II) Economic Problems of the Industrial Labor Market; (III) Resulting Institutional Developments; (IV) Political and Legislative Outgrowths; and (V) Conclusions. Each Part has a lucid and succinct preface and each chapter makes transition easy with a summary. Good writing and editing contribute to possibly good reception by the student.

Part I emphasizes semantics and develops the twin concepts of labor force and labor markets. The major theme and continuity thread which ties the textual fabric together is the influence of industrialization and mechanization upon individual wage earners and upon labor-management relationships. Here again there is an excellent opportunity for an avowed institutionalist to enlarge upon a real understanding of men-at-work in primary work groups. Some industrial sociologists may be stealing a march on their economist confreres in getting at grass roots factors in behavior.

Part II begins with the typical parade of wage theories. This effort seems unrealistically connected with the discussion on short-run wage determination and wage trends. Three chapters and 100 pages of this section are given over to wage problems yet only a few pages are devoted to the modern and much used job-evaluation methods of determining relative job-rates. Realism demands more interdisciplinary interaction of scholars.

The remaining five chapters of the section discuss: "Working hours" and working conditions and various forms of insecurities such as: unemployment, industrial accidents and disease and problems of aging workers. These problems are ably done in Morgan's own style of articulating. Sandwiched be-

tween discussions on these brands of employee insecurity is a unique contribution on Employment Theory. The whole continuum of explanations on unemployment and variations in full employment are clearly and briefly made. Then, in approximately 12 pages, there is a lucid summarization of the Keynesian approach.

Part III analyzes "dominant theories of labor movements" and then uses only three chapters to trace the growth of labor organizations in the United States and to explain Union Structure and Government. Here again there is a missed opportunity to make use of developing ideas on workers' needs other than economic. No real effort is made to show changing leadership influences in labor organizations including changing concepts about democratic forces at various levels of union organization. If industrialization has brought big unions into being, a student may wonder how members of unions overcome autocracy and misleadership.

In this section a separate chapter leans heavily on Bonnett in showing the growth and influence of Employer Bargaining Associations. Following this is a description and analysis of the "internal activities, tactics and devices of labor unions and employers (associations)" as agents in a dynamic brand of collective bargaining. Both Management Prerogatives and Union Rights get a going over as elements of institutional security requiring industrial government.

In Part IV the author shows excellent descriptive skill in tracing the ramifications of the external activities of bargaining agents. These activities are seen as political, legislative and public relational. The objectives of managerial and union leaders seem to tie into the economic consequences of industrialization without considering the research findings of the behavioral scientists which discuss the motivational influences of leaders trying to meet the noneconomic needs of both followers and leaders.

The meat of this part consists of two chapters on the advent and growth of labor relations law and the substantive labor law subsumed under such headings as: wages, hours, working conditions, economic security and the protection of unorganized minorities.

In the concluding Part, a single chapter serves as a vehicle for assessing the roles of each of the labor market institutions: labor organizations, employers and their associations, and the central government. Attention is centered on over-all economic consequences of these institutions with brief mention of the crucial key-problem of interinstitutional cooperation in the production process.

Morgan has tried to achieve the "goal of a relatively continuous story." He does this with a fluid style but fails to utilize the dramatic possibilities of modern ideas from organization theories and the men-at-work behaviorists.

ALBERT T. HELBING

Montana State University

Trade Unions in a Free Society. By B. C. ROBERTS. London: Institute of Economic Affairs, Hutchinson of London, 1962. Pp. 206. 30s.

This small volume by a well-known British expert combines his two earlier

books on British and American unionism. The two parts are quite independent, without any concluding comparative discussion. In the British part one wishes for more explicit comparison, as points of likeness or difference occur to the reader. The American section has more reference to British and other European experience. The analysis is well-informed and its broad perspective offers new insights. The assumption is that "free trade unionism is an essential feature of a free society, and that whenever it is possible and consistent with modern needs and equity, it is better to leave issues of social conflict to the autonomous solution of the parties than to administrative or legal regulation." Part I, on unions in Britain, includes chapters on the principles at stake, trade unions and wage problems, industrial relations, politics, and union structure and organization. Part II on the United States discusses union structure, democracy, corruption, wage bargaining and inflation, industrial relations, and politics.

Among the points of difference in British industrial relations from American are the relative absence of legal regulation of unions and collective bargaining and the lack of well-defined local rules. Collective agreements are more typically national, and are not legally enforceable contracts for definite terms. There is a growth of local bargaining, but still no wide-spread system of handling grievances as they arise, or of grievance arbitration. Shop stewards in many industries have substantial power, without being well-integrated into the union structure. As a result, large numbers of short local unauthorized strikes occur. The author recommends more attention to local problems and more effective control by the unions over shop stewards. Such changes also would make more possible the revision of out-dated attitudes towards restrictive practices.

Problems of individual rights are receiving increased attention in Britain, as in the United States. Compulsory unionism is not widespread in Britain and is not regulated by law. Rival unionism is opposed by the Trades Union Congress, which only in extreme cases will recognize a new union, breaking away from the old. Courts are showing a tendency to protect workers against expulsion or against improper election procedures. The more serious problems in the United States in these areas are recognized as having led to necessary regulation, although the author is not entirely optimistic as to the results. For Britain he suggests only that registration of unions, as a basis for legal privileges, should be granted only to unions whose rules provide adequate safeguards for members. A system of public appeal boards, similar to those in a few American unions, is recommended to British unions as a further safeguard of members' interests. He is concerned, also, lest in both countries the needs of stability so counteract the desirability of free choice of union, that the leadership is not enough subject to check by the membership.

Trade union democracy and apathy of members towards corruption or communist domination has become a matter of concern in Britain in some cases, parallel to the wider problem of corruption and undemocratic practices in some American unions. Contests in national union elections, however, are much more common in Britain than here. Excessive centralization of authority in the hands of the national officers, and lack of adequate finances and

staff for needed services, are more serious problems there. In American unionism, on the other hand, lack of contests in elections, difficulties of any effective opposition even in the most democratic union, centralization of power in national offices with their large funds, and absence of effective check by the rank and file, all raise questions. The author believes that the regulations imposed by the 1947 Labor-Management Reporting and Disclosure Act were needed and will be salutary. The problem of corruption as well as lack of democracy in so many American unions is seen as reflecting aspects of American society, and difficult to eradicate, despite efforts by the AFL-CIO and federal legislation.

On the problem of wage bargaining and inflation in both countries the author believes that excessive general demand is the major source of inflation. His studies reported elsewhere have shown that "every country which has attempted to control its inflation by means of national wage policy has failed to achieve the success for which it hoped." Obviously inflationary wage demands, however, and refusal of employers to compete by price reductions, pose problems difficult to solve, especially in view of conflicting demands for economic growth and price stability. He believes that in the United States political pressures will lead to some form of machinery for controlling the rate of wage increases, although the chances for success are slim. He suggests more adequate unemployment compensation to make some level of unemployment politically tolerable, and a higher degree of responsibility of all concerned, unions, employers, and government, if excessive inflation is to be prevented.

There is also interesting discussion of joint consultation, possibly overdone in Britain and not as effective locally as had been hoped, though the National Joint Advisory Councils have helped to maintain a healthy industrial atmosphere. For the United States the author believes that there is need to find ways for the ordinary worker to exercise a more creative role, with greater participation in local decision-making in the plants. At the national level he suggests that joint advisory councils similar to those in Britain and other European countries would enhance the prospect of improved industrial relations, in a country where industrial relations have been so marked by antagonism and conflict.

EMILY CLARK BROWN

Minneapolis, Minnesota

The Economics of Unemployment Compensation. By RICHARD A. LESTER.
Princeton: Industrial Relations Section, Princeton University, 1962.
Pp. x, 137. \$3.75.

In this stimulating monograph, Professor Lester attempts (1) to promote economic analysis in a chronically contentious area, (2) to bring to bear a measure of his own analyses on a number of outstanding issues of unemployment compensation, and (3) to recommend a program of amendments that might be acceptable to the differing parties all around.

From the standpoint of economic analysis, a system which in 1961 disbursed \$3.4 billion and collected \$2.6 billion, undeniably exerts significant

aggregative effects on the economy. No one would be inclined to argue that study of these effects is not worth while; indeed, this area has been much neglected. What may be disputable is Lester's interest in analysis as a means of enabling unemployment compensation to meet grand economic objectives, including countering the business cycle, maintaining mass purchasing power, meeting problems of new types of unemployment as they arise, and stabilizing the economy generally.

These would be truly formidable goals to attach to any social system, much less to a quasi-insurance, quasi-welfare one that has serviceably, if not too liberally, compensated partial wage loss for some 25 years to the tune of criticism from all directions. The practice, of course, is not new. It goes back to the 1930's when, in view of the then primitive state of countercyclical measures, economic objectives made good sales points for the proposed legislation. As these objectives are reiterated, the reviewer, for one, has grown somewhat dubious about looking to unemployment compensation to carry out multiple economic objectives. It may be much less distracting from more realistic goals to regard the economic effects of unemployment compensation as by-products rather than planned consequences. Moreover, what the new economy and labor force are doing to unemployment compensation seems to have become more important than the effects the other way round. A quarter of a century of experience offers little occasion for optimism that the system may yet prove a great controller of economic events.

Lester's own analyses bring out the inadequacies of unemployment compensation as an economic instrument. Since 1948, benefits have offset only 20 per cent of wage loss from total unemployment. Total benefits never exceed 2 per cent of aggregates like labor income, disposable income, or even consumption expenditures. Recession unemployment is compensated at the same rate as nonrecession unemployment, notwithstanding the teachings of business cycle theory. The patterns of quarterly net flows under the system have "unfortunate economic consequences" (p. 23). The inadequacy of benefit payments to individuals affects their buying patterns and reduces consumption. Benefits are "weak in leverage" (p. 37). Unemployment compensation is failing to meet the problems caused by a labor force composed of such diverse groups as students, married women, semi-retirees, part-time and intermittent workers, new entrants, older workers, and long-time unemployed.

On the experience-rated payroll tax—the carrier of numerous economic objectives and practically the only source of revenue for unemployment compensation—Lester finds that no more than a third of the tax is shiftable to the consumer in higher prices. Since the tax is thus not inflationary, it has not been overutilized. The long overdue rise in taxable wage base above the first \$3,000 of individual employee earnings is certified on the basis of thorough economic analysis. Nevertheless, the persuasiveness of Lester's briefs does not dispose of the need for diversification of revenue sources if noneconomic objectives are to be met.

Considering the stress on economic inadequacies, it is surprising that Lester should in the end advocate a 10-point "program for improvement" that will merely "necessitate modest changes in both federal and state laws"

(p. 124). These would include wider coverage, tightened eligibility, a mild federal benefit standard, higher taxable base, federal matching of extended benefit costs from the payroll tax, and a federal-state relief program. It is a little difficult to see how these marginal changes will suffice to turn unemployment compensation into an adequate economic instrument. They look much like the "muddy compromises" that Lester deplors at an earlier point (p. 5). Economic analysis cannot hurt the process of political compromise, but it will not sustain the assignment of high economic objectives to a system that ought to decline in significance as a many-sided, fully-complemented attack on unemployment finally gets underway. The latter would include both general economic measures for heightening effective demand and specific measures like the Area Redevelopment and Manpower Development and Training programs that are now at hand as well as others that are coming along. All these programs bespeak a shrinking role for unemployment compensation. Intent on fostering the economic role, Lester has little to say about them.

HARRY MALISOFF

Brooklyn College

The W. E. Upjohn Institute for Employment Research

Population; Welfare Programs; Consumer Economics

The Consumer in Our Economy. By DAVID HAMILTON. Boston: Houghton Mifflin Company, 1962. Pp. ix, 473. \$6.50.

Professor Hamilton's book puts consumption squarely into the field of economics as known today. If consumer economics textbooks were to be grade labeled like olives, this reviewer would put Hamilton's book in the "super-colossal" category. He offers a combination of demand theory, consumption patterns, and marketing material. He presents both "indifference" and cultural analyses of consumer behavior. Not only will the reader have the opportunity to become well informed about consumer economics but he may profit from following a first-class mind. In addition to all these virtues Hamilton is a good writer. After Samuelson, an economist has been expected to write wittily as well as accurately, at least from his colleagues' point of view. Professor Hamilton justifies this expectation.

The book consists of 14 chapters organized into four parts. The first of these has demand theory, a contrasting cultural approach, and an attempt to apply cultural observations to consumption, but it cannot be said that a new theory of consumption evolves. The next part is concerned with consumers in the market, beginning with standards of living, including family finance, aids to consumers, cooperatives, consumer pressure group (or its lack). The third part is concerned with government's relation to consumers such as resale price maintenance laws. The last section explains the Keynesian view of consumption's role in national income determination.

Courses in consumer economics are taught in many different departments in this country. A home economics specialist might want the second part expanded, but books such as Margaret G. Reid's *Consumers and the Market*, Jessie V. Coles' *The Consumer-Buyer and the Market*, and Elizabeth E.

Hoyt's *Consumption in our Society* are available no longer for current textbook use. A teacher in a liberal arts economics department would find Hamilton's book at least as useful as Cochrane and Bell's, and probably better than Bryant Phillips'. J. N. Morgan's material on family finance is good, but Hamilton includes similar material and encompasses more economics in sections 1 and 4. The obvious limitation of section 3 is that only a narrow view of the government's activities is presented. Clair Wilcox in *Public Policies Toward Business* gives a broader perspective, but his book is not otherwise adapted to a course in consumer economics.

An economist will not be disappointed in Hamilton's exposition of demand theory. He does one of the best one-chapter jobs available. Beginning with marginal utility, going on to indifference analysis, and ending with the ordinal-behaviorist approach he explains demand theory so that any student willing to do the work can understand it; nevertheless, an economist would not feel that the material had been treated superficially.

He is less successful in his effort to coordinate cultural behavior and consumption theory. In Chapter 2 where he attempts to describe human nature he is in fact describing classifications for studying it: culture, mores, status-defining role, rite. No generalizations are made about human behavior per se. Without them, however, this reviewer does not understand what is superior about a cultural approach to the economic theory of consumption.

If cultural understanding is to be used for prediction one would need to do as Veblen did and focus upon the elements of change or conflict within the culture. Hamilton refers to Veblen's "two aspects of culture," the "instinct" of workmanship and pecuniary emulation. "All of human activity is a mixture of both institutional and technological behavior" (p. 54). This is as close as he gets to generalization about human behavior upon which a theory of demand could be founded. His work should not be depreciated, however. He is making a pioneer attempt to combine the knowledge of human nature contributed by other social sciences to the need for that knowledge which gaps in economics.

Hamilton is at his best, in this reviewer's opinion, in a chapter such as "The Standard of Living and Its Measurement." What can be learned he presents, and that is a great deal.

He short-changes standardization, in this reviewer's estimation. Standards are the basis for intelligent comparison by consumers. Hamilton describes consumer-testing agencies' work, but standardization should be considered with reference to its function in a semicompetitive economy.

Hamilton's knowledge of cultures is reflected in his recognition of consumer credit's importance in our economy. Probably this book was written too early to include the "Truth in Lending" controversy publicized through Senator Douglas' committee.¹ No attention is given the role of pressure groups in keeping a multiplicity of formulas before consumers so that not only do many consumers not know how to compute the true annual interest rate, but experts do not have *one* best choice.

¹ Senator Paul Douglas' subcommittee, Senate Committee on Banking and Currency, 1st sess., on S. 1740.

If one focuses on what this book has rather than what it has not, Hamilton shows why economics of consumption is part of the economics curriculum in some universities.

VIOLA WYCKOFF

New York University

Related Disciplines

Conflict and Defense: A General Theory. By KENNETH E. BOULDING. New York: Harper & Brothers, 1962. Pp. ix, 349. \$7.00.

This book is an important contribution by a distinguished economist to the growing trend toward more rigorous theoretical analysis in the social sciences other than economics. Its purpose is to analyze social conflicts, and in particular international conflicts, by means of formal analytical models derived from a large number of different disciplines, such as economics (especially utility theory and the theory of duopoly); Lewis F. Richardson's mathematical theory of arms races; mathematical ecology dealing with interaction between populations of different biological species; Kurt Lewin's and Neil E. Miller's theory of intrapersonal conflicts; and several other fields.

The author makes very skillful use of simple geometrical tools of analysis and always restates his conclusions in "literary" terms, which should make his book basically accessible also to social scientists with little mathematical background—though of course full understanding of the argument inevitably does require some mental effort by the mathematically unsophisticated. The book brings together such a wealth of material that it cannot be adequately summarized within the space available.

Fundamental to the author's theory of conflict is the distinction between shortsighted and longsighted behavior. Shortsighted behavior consists in regarding the opponent's strategy as given and choosing a strategy that is the best reply to the opponent's strategy. If both parties follow such shortsighted behavior, the result will be a conflict process more or less like a Richardsonian arms race. If this leads to an equilibrium situation at all, it will lead to what game theorists call a noncooperative equilibrium point. But in most cases both parties could do better by adopting a cooperative joint strategy, which Boulding calls longsighted behavior.

So long as the parties persist in shortsighted behavior (or so long as there is any danger that they may relapse into such behavior), the question arises whether either party could annihilate or conquer the other without committing suicide. This question is analyzed by the author's theory of viability. This is perhaps the most important technical contribution of the book. His basic model is derived from the theory of spatial competition between duopolists and is then extended to international rivalry between two countries. The essential conclusion is that different countries will retain their viability against each other if they (or their centers of gravity) are not too close to each other; if the costs of transport for military forces and equipment are sufficiently high; and if the efficiency of national military organizations is subject to strongly enough diminishing returns to scale. Up to the advent of the atomic

bomb these conditions were satisfied and so a many-nation system of international organization was a stable system. But since the availability of atomic weapons to *both* the United States and the Soviet Union no nation now has full security (viability) against her rivals; and the whole international system based on a control of armed forces by independent national governments has become intrinsically unstable. Only an international police force controlled by a supranational organization, with appropriate arrangements for international conciliation, mediation, and arbitration, can restore international stability.

Though the author draws his models from a large number of different fields, he combines them remarkably well into an integrated general theory. But the reviewer feels that at some points this integration is less than fully successful. In particular, in the discussion of the Lewin-Miller theory of intrapersonal conflict, it never becomes completely clear, e.g., why the subject's stable equilibrium position at some "optimal" distance from an ambivalent goal is unsatisfactory, in spite of the fact that according to the author's analysis it seems to correspond to the position of maximum utility. This situation cannot be satisfactorily analyzed without distinguishing between the "true" utility of the goal to the subject and its "apparent" utility often distorted by distance. The stable equilibrium point at some distance from the goal is regarded as unsatisfactory because it is implicitly assumed that the "true" maximum-utility point is either the goal itself (if the goal on the balance has positive net utility to the subject) or is a point very far away from the goal (if the goal on the balance has negative net utility)—but in neither case is the true maximum-utility point half-way in between, where the subject can neither get himself to reach out for the goal nor to give it up altogether. (In actual fact, the concept of "apparent" utility distorted by distance is touched upon by the author himself when he suggests that a bale of hay "will smell a little sweeter" to Buridan's ass when he moves closer to it (p. 82). But in later analysis no use is made of the assumption that the approach and avoidance gradients are based on gradients of "apparent" rather than "true" utility.)

Another point where the author's analysis is less than perfectly clear is his discussion of shortsighted and longsighted behavior in conflict (and in particular in duopoly) situations. It is not explained that the primary reason for shortsighted behavior (i.e., for playing a non-cooperative rather than a cooperative game) is justified mutual distrust due to the absence of agreement-enforcing mechanisms in many situations, making the establishment of law-enforcing mechanisms an essential prerequisite for longsighted behavior. Moreover, since the author makes no use of any specific bargaining model it does not become clear how the two parties can ever agree on particular terms for their cooperation.

But these are minor objections which do not affect the value of this book as a major contribution to the theory of social conflicts, and more generally as a valuable kit of tools for the social scientists working on the slowly emerging integrated interdisciplinary general theory of social behavior.

JOHN C. HARSANYI

Wayne State University

Microanalysis of Socioeconomic Systems: a Simulation Study. By G. H. ORCUTT, M. GREENBERGER, J. KORBEL, AND A. M. RIVLIN. New York: Harper and Brothers, 1961. Pp. xviii, 425. \$8.00.

This book is a progress report on continuing research on microanalysis of economic systems by means of simulation. It describes the work of several people for a three-year period. It is a difficult book to review because it is too early to evaluate the potential of simulation techniques, either in predicting economic behavior or in analysis of various hypotheses concerning economic components or aggregates. The contents of this book do not constitute an adequate basis for such an evaluation. While it cannot be denied that simulation possesses different capabilities than standard analytical methods, still the proof of the pudding lies in the eating and it is possible to get but a meagre taste at the present time. Since the stimulation techniques used were described by Orcutt in this journal recently (December, 1960), a description will not be given here.

The authors contend that traditional economic predictions based on relationships between highly aggregated economic entities are doomed to failure because they do not consider the detailed economic microstructure underlying the far-from-homogeneous aggregates. It is the authors' hope that improved predictions will result from the consideration of relationships among "fundamental decision-making units" such as individual families, firms, specific markets, etc. The possibility of using such detailed models for analysis has only come about recently and is attributable to advances in the fields of survey techniques, electronic computers, and multivariate economic analysis. The behavior of economic aggregates is to be estimated by simulating the behavior of a large number of each of various types of decision-making units. The task is tremendous. It is obvious that reality is far more complicated than any simulations that can be handled on the largest of computers. There are therefore important decisions to be made concerning what aspects of reality to incorporate in the simulation and what hypotheses to test. A slight oversight in experimental design could involve years of additional data collection. It seems inevitable that gathering of basic data specifically for use in the models must be carried out.

It is possible to aggregate the outputs of the model for purposes of comparison with data derived from other models and reality. Unfortunately, however, not many such comparisons are described, the reader being provided with only brief descriptions of the "lengthy series of tests, sensitivity experiments, and projection runs" of the demographic model which was the one in the most advanced state of development. The other models in the book include one of the labor force, one of debt and liquid asset structure, one of the demand for higher education, and one of associativeconomic system. These models have not yet been subjected to extensive testing.

The authors are candid in pointing out the possibility that their models may not be an adequate representation of reality and that the use of simulation in no way assures a more realistic model. It is the authors' belief that it is easier to introduce realism at a highly detailed rather than a highly aggregated level, although this may be extremely difficult to accomplish. For example, no matter how detailed the consideration of birthrates, the postwar

baby boom would not have been predicted. It is possible to introduce a microstructure that is too fine into a model as well as one that is too coarse. Improved analytical micro-models may be needed to provide adequate data for the simulation. Although many different cases can be simulated for different values of the input parameters, for prediction purposes it is necessary to have a knowledge of which of these values are more likely, or which are less. Without this knowledge it is not clear which of the simulations constitutes the best basis for prediction.

Two aspects of simulation that perhaps deserve more attention than they receive are the question of the statistical reliability of the output when inputs are stochastic, and the costs of making sensitivity analyses. The first of these problems is essentially ignored, although it is of great importance from both the point of view of costs and usefulness of results. With too small a number of random draws, the output could vary more because of random inputs than from changes in the value of the input parameters. Concerning sensitivity analyses, one of several suggested procedures (p. 386) was to vary parameters one at a time. Clearly the costs of such a procedure would be prohibitive.

The authors write that it is evident that "the major development and use of microanalytic models through simulation and other techniques lies in the future." They are to be commended for undertaking the difficult first steps whether or not the simulation technique fulfills all their hopes.

THOMSON M. WHITTIN

University of California
Berkeley

Economic and Social Consequences of Disarmament. United Nations' Economic and Social Council, 34th session, agenda item 5. New York: U.N. Sales Sec., Office of Conference Service, 1962. Pp. ix, 66. 75¢.

Economic Impacts of Disarmament. Washington, D.C.: U.S. Arms Control and Disarmament Agency, 1962. Pp. 28. 15¢.

A major depression would not result from disarmament in this or any country of the world, and reduced military spending would be an unqualified economic and social blessing. This conclusion was reached by two independent study groups composed of outstanding economists from many nations.

In January of 1962 the United States Arms Control and Disarmament Agency released a significant report in pamphlet form entitled "Economic Impact of Disarmament." This analysis, made under the leadership of Emile Benoit, professor of international business at Columbia University, focused its attention on the economy of the United States. A month later the U.N. Economic and Social Council published its document on "The Economic and Social Consequences of Disarmament." This report draws upon the knowledge of ten economists from as many countries including Wassily Leontief from the United States (Harvard), Oskar Lange of Poland, and V. K. Aboltin of the Soviet Academy of Science.

The United States report assumes that disarmament would be gradual and partial. It expects military spending to actually increase to approximately \$56 billion by 1965. Then, if world tensions are relaxed and workable agree-

ments are reached, our defense spending could decline by about \$38 billion over a 12-year period until we were spending only \$18 billion a year by 1977.

The time table envisaged by the U.N. study group would be much more rapid and the disarmament would be total for all countries. They estimate, at the present time, military spending amounts to \$120 billion a year, and about 50 million people are directly involved in the arms program. All of these resources would be quickly released for civilian utilization. The assumption of rapid total disarmament shows most clearly the benefits to be derived and the problems to be encountered.

Benoit in the U.S. study stresses the magnitude of the conversion in light of our complex, profit-oriented, industrial economy. Emphasis is placed on the difficulties of maintaining aggregate demand so as to prevent a depression. He discusses the possibilities of debt reduction, reduced taxes and increased disposable income, and of stepped-up public works. With advanced planning by governments, business firms, unions and private organizations there would be very little danger of an immediate depression of the economy. However, the aircraft, missile, shipbuilding and communications industries, which now receive the bulk of their orders from the Defense Department, and are concentrated in a few geographic areas, would be seriously damaged by the transition.

The U.S. committee questions the ability of the nation to maintain an acceptable level of growth without the stimulation of the research and development that now emanates from defense expenditures. Disarmament might, however, force scientists to re-examine research goals, and perhaps turn their talents to overcoming the technological obstacles to international economic growth and development.

The report confidently concludes that monetary and fiscal policies are adequate to cope with the economic problems that accompany any required level of military spending. But difficulties are apt to be encountered in overcoming political attitudes, vested interests, public positions, and institutional blocks.

The U.N. study believes that its conclusions are valid not only for the industrialized free-enterprise economies of the West, but also for the planned economies and for the underdeveloped nations. Economists from these three types of countries served on the study committee and were able to delineate unique problems their economies might encounter. The Communist nations would not face the problem of a declining aggregate demand nor of a cyclical contraction. Instead, their adjustment would be primarily one of adapting the physical production facilities from turning out war goods to civilian goods. The U.N. report was highly optimistic about the ease and speed with which this could be done in the Soviet Union, Poland, Yugoslavia and China.

The U.N. pamphlet deals extensively with the impact of disarmament on the underdeveloped economies. Not only could these nations be released from the burden of the military payroll, but they could reduce the number of men under arms. These men are apt to be better educated, more skilled, and in finer health than the population in general, and could make a significant contribution to production. In addition, many of these poorer countries now

use their scarce foreign exchange to buy the military hardware they are unable to produce domestically. These funds would be released, if disarmament were to prevail, and could be used to purchase capital goods. The one difficult problem some of these nations might face concerns the temporary loss of the market for the minerals or raw materials they now supply to the military powers for defense utilization. But, on the whole, greater benefits could accrue to the people in these low-income countries from disarmament than to those in highly developed nations.

The report by the United Nations on the consequences for the industrial private enterprise economies parallels the Benoit report for the United States. The U.N. study quotes the favorable results of Leontief's input-output analysis of disarmament and also, a similar study for England completed by J. R. N. Stone of Cambridge.

Cautious optimism characterizes the U.S. report, but the U.N. analysis unanimously, and without reservation, concludes that the transition can be smoothly made with appropriate national and international cooperation. A disarmed world of peace is visualized, with better housing for all, improved nutrition and health, more leisure, reduced tension, increased international trade and travel, and freedom from compulsory military service. In the words of the document, "The achievement of general and complete disarmament would be an unqualified blessing to all mankind."

ALBERT L. GRAY, JR.

Baldwin-Wallace College

TITLES OF NEW BOOKS

General Economics; Methodology

- DYE, H. S., MOORE, J. R. AND HOLLY, J. F. Economics—principles, problems, and perspectives. Boston: Allyn and Bacon, 1962. Pp. xii, 627. \$7.75.
- FERGUSON, C. E. AND KREPS, J. M. Principles of economics. New York: Holt, Rinehart and Winston, 1962. Pp. xii, 852. \$7.95.
- HARRISS, C. L. The American economy—principles, practices, and policies. 4th ed. Homewood, Ill.: Irwin, 1962. Pp. xiv, 895. \$7.
- KASNACICH-SCHMID, J. Modernes Wirtschaftsdenken. Cologne: Bund-Verlag, 1961. Pp. 311. DM 15.80.
- MAHR, A. *Volkswirtschaftslehre*. 2nd ed. Vienna: Springer, 1959. Pp. 491.
- MISES, L. VON. The ultimate foundation of economic science—an essay on method. Princeton: Van Nostrand, 1962. Pp. xi, 148. \$4.50.
- ROTEBARD, M. N. Man, economy, and state—a treatise on economic principles. 2 vols. Princeton: Van Nostrand, 1962. Pp. xviii, 462; ix, 525. \$20 set; not sold individually.
- SNIDER, D. A. Economics—principles and issues. Accompanying workbook by W. I. Edwards. Homewood, Ill.: Dorsey Press, 1962. Pp. xvi, 654. \$7.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- BAILEY, M. J. National income and the price level—a study in macrotheory. New York: McGraw-Hill, 1962. Pp. ix, 304. \$6.95.
- BOBER, M. M. Intermediate price and income theory. Rev. ed. New York: Norton, 1962. Pp. xvii, 510. \$6.95.
- CORRY, B. A. Money, saving and investment in English economics 1800-1850. New York: St. Martin's Press, 1962. Pp. xi, 188. \$6.75.
- DRÄGER, H. Die Illusion unserer Produktivität. Ein Diskussionsbuch mit statistischen Unterlagen und Sachverständigengutachten über die Zusammenhänge zwischen Produktivität, Lohn, Sozial-Rente und Preis. Düsseldorf and Vienna: Econ-Verlag, 1961.
- FREY, L. Sviluppo economico e struttura del mercato finanziario. Milan: A. Giuffrè, 1961. Pp. 278. L. 18.00.
- GORDON, M. J. The investment, financing, and valuation of the corporation. Homewood, Ill.: Irwin, 1962. Pp. xiv, 256. \$6.50.
- HANSEN, P. The accounting concept of profit—an analysis and evaluation in the light of the economic theory of income and capital. Amsterdam: North-Holland Pub. Co., 1962. Pp. 142. Paper, \$4.20.
- HARRISS, C. L. Selected readings in economics. 2nd ed. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xv, 557. Paper, \$3.95.
- KHAN, M. S. Ricardo's theory of distribution. Faculty of Arts pub. ser. no. 4. Aligarh: Muslim Univ., 1960. Pp. 183.
- KRELLE, W. Verteilungstheorie. Tübingen: J. C. B. Mohr (Paul Siebeck), 1962. Pp. xi, 299. DM 59; paper, DM 54.
- LJEFMANN-KEIL, E. Ökonomische Theorie der Sozialpolitik. Berlin: Springer, 1961.
- OXENFELDT, A., MILLER, D., SHUCHMAN, A., AND WINICK, C. Insights into pricing—

- from operations research and behavioral science. Belmont, Calif.: Wadsworth, 1961. Pp. 124.
- PETERSON, W. C. Income, employment, and economic growth. New York: Norton, 1962. Pp. xvii, 550. \$6.95.
- POPESCU, O. Introducción a la ciencia económica contemporánea. La Plata: Ed. del Inst. Econ. Fin., 1961. Pp. 103.
- SCHNEIDER, E. Einführung in die Wirtschaftstheorie. Pt. 4, vol. 1, Ausgewählte Kapitel der Geschichte der Wirtschaftstheorie. Tübingen: J. C. B. Mohr (Paul Siebeck), 1962. Pp. viii, 423. DM 28; paper, DM 23.
- SCHNEIDER, E. Money, income and employment. Transl. from German by K. Klappholz. New York: Macmillan, 1962. Pp. 290. \$6. First pub. Tübingen.: J. C. B. Mohr (Paul Siebeck), 1953.
- THALBERG, B. A Keynesian model extended by explicit demand and supply functions for investment goods. Stockholm: Almqvist & Wiksell, 1962. Pp. 57. SKr. 7.
- TINBERGEN, J. AND BOS, H. C. Mathematical models of economic growth. New York: McGraw-Hill, 1962. Pp. viii, 131. \$6.90.
- WEBER, M. General economic history. Transl. from German by F. H. Knight. New York: Collier Books, 1961. Pp. xviii, 288. Paper, \$1.50.
- WHITE, Z. Unearned economic benefits. New York: Exposition Press, 1962. Pp. 87. \$3.
- WRIGHT, D. MCC. The Keynesian system. Millar lectures no. 4, 1961. New York: Fordham Univ. Press, 1962. Pp. vii, 90. \$3.
- Progresso tecnico e sviluppo economico. Contrib. dell'Istituto di Sci. Econ., vol. 5. Milan: Vita e Pensiero, 1962. Pp. 244.
- The rate and direction of inventive activity: economic and social factors. A conference of the Universities-National Bureau Committee for Economic Research and the Committee on Economic Growth of the Social Science Research Council, NBER spec. conf. ser. no. 13. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1962. Pp. xi, 635. \$12.50.

Economic History; Economic Development; National Economies

- CAIRNCROSS, A. K. Factors in economic development. London: Allen & Unwin, 1962. Pp. 346. 35s.
- CARLYLE, M. The awakening of Southern Italy. New York: Oxford Univ. Press, 1962. Pp. 144. \$3.40.
- FISHMAN, B. G., AND FISHMAN, L., IN COLLAB. WITH OTHERS. The American economy. Princeton: Van Nostrand, 1962. Pp. xxii, 822. \$7.95.
- GALBRAITH, J. K. Economic development in perspective. Cambridge: Harvard Univ. Press, 1962. Pp. 675. \$2.50.
Five lectures given in India in 1961.
- GANNAGÉ, É. Économie de développement. Paris: Presses Univ. de France, 1962. Pp. xi, 352. NF 24.
- GHOSH, S. The financing of economic development. Calcutta: World Press, 1962. Pp. 100. Rs 6.50.
- GREEN, C. McL. Washington—village and capital, 1800-1878. Princeton: Princeton Univ. Press, 1962. Pp. xix, 445.
- GREGG, J. Commerce of the prairies. The 1844 ed., unab., 2 vols. Philadelphia: J. B. Lippincott, 1962. Pp. xix, 172; ix, 179. Paper, \$1.95 each vol.
- GRUNWALD, K. AND RONALL, J. O. Industrialization in the Middle East. New York: Council for Middle Eastern Affairs Press, 1960. Pp. xx, 394. \$7.
- HABAKKUK, H. J. American and British technology in the nineteenth century—the search for labour-saving inventions. New York: Cambridge Univ. Press, 1962. Pp. 222. \$6.
- HAGEN, E. E. On the theory of social change—how economic growth begins. Homewood,

- III.: Dorsey Press for Center for Internat. Stud., Massachusetts Inst. of Technology, 1962. Pp. xvii, 557. \$7.50.
- HARTMANN, H. Enterprise and politics in South Africa. Research rept. ser. no. 102. Princeton: Indus. Rel. Sec., Dept. of Econ., Princeton Univ., 1962. Pp. ix, 101. Paper, \$3.
- HAUSER, P. M., ed. Urbanization in Latin America—proceedings of a seminar jointly sponsored by the Bureau of Social Affairs of the United Nations, the Economic Commission for Latin America, and Unesco (in co-operation with the International Labour Organisation and the Organization of American States) on urbanization problems in Latin America, Santiago (Chile), 6 to 18 July 1959. New York: Internat. Doc. Svce., Columbia Univ. Press for Unesco, 1961. Pp. 331. \$4.50.
- HENDERSON, W. O. The industrial revolution in Europe 1815-1914. Chicago: Quadrangle Books, 1961. Pp. ix, 288. \$6.
- HOFFMAN, G. W. AND NEAL, F. W. Yugoslavia and the new Communism. New York: Twentieth Century Fund, 1962. Pp. xvi, 546. \$8.
- JASNY, N. Essays on the Soviet economy. New York: Praeger, for Inst. for the Stud. of the USSR, 1962. Pp. xiv, 297.
- JOHNSON, H. G. Canada in a changing world economy. Alan B. Plaunt Memorial Lectures, Carleton Univ., Ottawa, Feb. 15, 18, 1962. Toronto: Univ. of Toronto Press in coop. with Carleton Univ., 1962. Pp. 62. \$2.50.
- KARMEL, P. H. AND BRUNT, M. The structure of the Australian economy. Melbourne: F. W. Cheshire, 1962. Pp. xii, 154. 18s. 6d.
- KAUFMAN, A. Small-scale industry in the Soviet Union. NBER occas. paper no. 80. New York: Nat. Bur. Econ. Research, 1962. Pp. xvi, 95. \$2.
- MAGALHÃES, J. P. A. Uma nova formulação teórica para o desenvolvimento econômico Brasileiro. Rio de Janeiro: Confederação Nacional da Industria, s.d. Pp. 74.
- MATA, H. M. Petróleo y desarrollo económico de Venezuela. Caracas: Ed. Pensamiento Vivo s.a., 1962.
- MERTIN, J. Das Dorfentwicklungsprogramm als Methode des Wirtschaftsaufbaus für das ländliche Indien. Stuttgart: Gustav Fischer, 1962. Pp. ix, 151. DM 25.50.
- MONTIAS, J. M. Central planning in Poland. New Haven and London: Yale Univ. Press, 1962. Pp. xv, 410. \$7.50.
- MOORSTEEN, R. Prices and production of machinery in the Soviet Union 1928-1958. Cambridge: Harvard Univ. Press, 1962. Pp. xi, 498. \$15.
- NUTTER, G. W. WITH BORENSTEIN, I. AND KAUFMAN, A. Growth of industrial production in the Soviet Union. NBER no. 75, gen. ser. Princeton: Princeton Univ. Press. for Nat. Bur. Econ. Research, 1962. Pp. xxvii, 706. \$15.
- OKIGBO, P. N. C. Nigerian national accounts 1950-57. Enugu, Eastern Nigeria: Fed. Ministry of Econ. Development, Gov. Printer, 1962. Pp. xv, 206. 20s.
- PHILIP, K. Wirtschaftsstruktur und Strukturpolitik. Kieler stud. n.s. no. 21. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1962. Pp. 24.
- REDDAWAY, W. B. The development of the Indian economy. Homewood, Ill.: Irwin, 1962. Pp. 216. Paper, \$3.75.
- ROBBINS, R. M. Our landed heritage—the public domain, 1776-1936. Lincoln: Univ. of Nebraska Press, 1962. Pp. xi, 450. Paper, \$1.95.
- ROSOVSKY, H. Capital formation in Japan 1868-1940. New York: Free Press of Glencoe, 1961. Pp. xiii, 358.
- SHAPIRO, H. D. Confiscation of Confederate property in the North. Ithaca: Cornell Univ. Press, 1962. Pp. x, 58. \$1.50.
- SPULBER, N. The Soviet economy—structure, principles, problems. New York: Norton, 1962. Pp. xiii, 311. \$5.95.
- THOMAS, B., ed. The Welsh economy—studies in expansion. Cardiff: Univ. of Wales Press, 1962. Pp. xv, 216. 30s.

- WARIS, K. *Entwicklungsprobleme der finnischen Wirtschaft*. Kieler n.s. no. 20. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1962. Pp. 12.
- WILCOX, C., WEATHERFORD, W. D., JR. AND HUNTER, H. *Economies of the world today: their organization, development, and performance*. New York: Harcourt, Brace & World Inc., 1962. Pp. vii, 148. \$1.85.
- Conference on industrial development banking held in Murree, Pakistan, June, 1961. Murree: CENTO, s.d. Pp. 94.
- Economic Bulletin for Africa*. Vol. 1, no. 1. New York: Sales Sec., U.N., 1961. Pp. 126. 75¢.
- Preliminary version issued as a document for the third Session of ECA.
- Economic development and its social implications—technological change and industrialization. International Social Science Council with G. Balandier, J. A. Banks, J. Clyde Mitchell, L. A. Costa Pinto, H. El-Saaty, A. S. Feldman, W. E. Moore, J. -Cl. Pauvert and C. N. Vakil. Paris: Presses Univ. de France, 1962. Pp. 209. NF 15.
- The economic development of Uganda—report of a mission organized by the International Bank for Reconstruction and Development at the request of the Government of Uganda. Baltimore: Johns Hopkins Press for Internat. Bank for Reconstruction and Develop., 1962. Pp. xviii, 475.
- Economic developments in South America. Hearings before the Subcommittee on Inter-American Economic Relationships of the Joint Economic Committee, 87th Cong., 2nd sess., May 10 and 11, 1962. Washington: Supt. Docs., 1962. Pp. iii, 151. 40¢.
- Indonesian economics: the concept of dualism in theory and policy. The Hague: W. van Hoeve, for Royal Tropical Inst.; Vancouver: Inst. Asian and Pacific Stud., Univ. of British Columbia, distrib. in U.S. and Canada, 1962. Pp. xii, 443. \$7.50.
- L'industrie Katangaise—réalisations et perspectives. Pub. de l'Univ. de l'état à Élisabethville, xol. 2. Élisabethville: Comm. des Pub. de l'Univ. de l'État à Élisabethville, 1961. Pp. vi, 404.
- Madagascar—Études et perspectives économiques. Cahiers I.S.E.A., no. 121, ser. F., no. 17. Paris. Sci. Écon. Appliquée, 1962. Pp. 290.
- Contributions by: G. Leduc, A. Mullier, J. Gillain, P. Ottino, E. Uhart, A. Perodeau, C. Chassaigne, R. Julienne, R. Lemoyne, R. Gendarme and J.-C. Perrin.
- Marketing of jute in East Pakistan. Dacca: Dacca Univ. Socio-Econ. Research Board; Oxford Univ. Press, distrib., 1961. Pp. xiv, 327. Rs 21.
- A note on the utilization of agricultural surpluses for economic development in Pakistan—a study prepared by the ECAFE/FAO Agriculture Division, Bangkok, 1961. New York: Columbia Univ. Press for U.N., [1961.] Pp. 66.
- Ocupación y desocupación Gran Santiago, Concepción, Provincia de O'Higgins, Diciembre de 1961. Inst. Econ. pub. no. 45. Santiago: Inst. Econ. Univ. Chile, 1962. Pp. vii, 41.
- Sweden's economy 1961—an economic survey. Stockholm: Svenska Handelsbanken, 1962. Pp. 60.
- Techno-economic survey of Orissa. New Delhi: Nat. Council of Applied Econ. Research, 1962. Pp. xv, 309. Rs. 20.
- Techno-economic survey of Punjab. New Delhi: Nat. Council of Applied Econ. Research, 1962. Pp. xii, 284. Rs 20.

Statistical Methods; Econometrics; Social Accounting

- ACKOFF, R. L., WITH GUPTA, S. K. AND MINAS, J. S. *Scientific method—optimizing applied research decisions*. New York: Wiley, 1962. Pp. xii, 464. \$10.25.
- ARROW, K. J., KARLIN, S. AND SCARF, H., ed. *Studies in applied probability and management science*. Stanford math. stud. in soc. sci., no. 7. Stanford: Stanford Univ. Press, 1962. Pp. 287. \$8.50.
- AVONDO-BODINO, G. *Economic applications of the theory of graphs*. New York: Gordon and Breach, 1962. Pp. xi, 111. \$5.50.

- BORKO, H., ED. Computer applications in the behavioral sciences. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. 633. \$8.75.
- DEANE, P., ED. Studies in social and financial accounting. Income and wealth ser. no. 9. Chicago: Quadrangle Books for Internat. Assoc. for Research in Income and Wealth, 1961. Pp. 254.
- HAMPEL, L. F. AND LEABO, D. A. Workbook in business and economic statistics. 5th ed. Homewood, Ill.: Irwin, 1962. Var. pp. Paper, \$3.95.
- HARTLE, D. G. The employment forecast survey. Canadian stud. in econ. no. 14. Toronto: Univ. of Toronto Press, 1962. Pp. xi, 153.
- JOKSCH, H. C. Lineares Programmieren. Tübingen: J. C. B. Mohr (Paul Siebeck), 1962.
- KLEIN, L. R. An introduction to econometrics. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. viii, 280. \$7.50.
- KRAVIS, I. B. The structure of income—some quantitative essays. Philadelphia: Wharton School of Finance and Commerce, Univ. of Pennsylvania, 1962. Pp. v, 317.
- NEMCHINOV, V. S., ED. *Primenenie matematiki v ekonomicheskikh issledovaniyakh*. (Application of mathematics in economic investigations.) Vol. 2. Moscow: Sotsekgiz, 1959. Pp. 486.
- RUGGLES, R. AND RUGGLES, N. A comparison of national accounts data for the United States classified according to the concepts of the United Nations system of national accounts and the material product system. Memo. prepared for submission to the Conference of European Statisticians. Washington: Office of Stat. Standards, Bur. of the Budget, 1962. Pp. 39.
- YAMANE, T. Mathematics for economists—an elementary survey. Englewood Cliffs: Prentice-Hall, 1962. Pp. xv, 554. \$9.75.

Economic Systems; Planning and Reform; Cooperation

- DOBBS, M. Capitalism yesterday and today. New York: Monthly Review Press, 1962. Pp. 91. \$1.
- KUMAR, B. An introduction to planning in India. Calcutta: Bookland, 1962. Pp. 233. Rs 6.
- ÉTUDES DE MARXOLOGIE (5). Cahiers I.S.E.A., suppl. no. 121, ser. S., no. 5. Paris: Inst. Sci. Écon. Appliquée, 1962. Pp. 222. Contributions by: M. Rubel, L. Epsztein, P. Mattick, H. Deroche, N. McInnes and including texts of Marx, Engels and G. Sorel.

Business Fluctuations

- GOWDA, K. V. Fiscal policy and inflation in post-war India, 1945-54 (a macro-economic analysis). A doctoral dissertation. Mysore: Rao & Raghavan, 1959. Pp. vi, 306. \$7.75.
- KUTHE, H. C. Getting rid of unemployment. New York: Bus. Bourse Pub., 1962. Pp. iv, 85. \$1.50.
- STANBACK, T. M., JR. Postwar cycles in manufacturers' inventories. Stud. in bus. cycles no. 11. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1962. Pp. 146. \$2.
- Variability of private investment in plant and equipment. Pt. 2, Some elements shaping investment decisions. Joint Economic Committee, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 55.

Money, Credit and Banking; Monetary Policy;

Consumer Finance; Mortgage Credit

- BAGEHOT, W. Lombard Street—a description of the money market. Homewood, Ill.: Irwin, 1962. Pp. xvi, 176. Paper, \$2.25.
- First pub., New York: Scribner, Armstrong, 1873. This reprint has a new introduction by F. C. Genovese.
- DAHLBERG, A. O. Reduce the price of gold and make money move. New York: U.S. Economics Corp., 1962. Pp. 31. \$1.25.

- GAMBINO, A. *Economia creditizia*. Turin: UTET, 1962. Pp. xvi, 385. L. 3.800.
- GUNASEKERA, H. A. de S. From dependent currency to central banking in Ceylon—an analysis of monetary experience 1825-1957. London: G. Bell for London School of Econ. and Pol. Sci., Univ. of London, 1962. Pp. xi, 324. 45s.
- Kreps, C. H., Jr. *Money, banking and monetary policy*. New York: Ronald, 1962. Pp. vi, 607. \$7.50.
- LUTZ, F. A. *Geld und Währung—Gesammelte Abhandlungen*. Tübingen: J. C. B. Mohr (Paul Siebeck), 1962. Pp. 267. DM 29.50.
- ROTHBARD, M. N. *The panic of 1819—reactions and policies*. New York and London: Columbia Univ. Press, 1962. Pp. vi, 261. \$6.
- SENUKLA, D. K. *A text book of monetary economics*. Baroda: Shiv Pustakalaya, distrib., 1962. Pp. 370. Rs 8.
- WANG, S. C. *Problems in implementing full disclosure of consumer credit cost*. Honolulu: Econ. Research Center, Univ. of Hawaii, 1962. Pp. 66. Mimeo.
- Recent developments in the structure of banking, a supplement to concentration of banking in the United States. Special staff report of the Board of Governors of the Federal Reserve System submitted to the Senate Select Committee on Small Business, Jan. 5, 1962. Washington: Supt. Docs., 1962. Pp. 30.
- Supplement to banking & monetary statistics. Sec. 15, international finance. Washington: Board of Governors, Fed. Reserve System, 1962. Pp. 92. 65¢.

Public Finance; Fiscal Policy

- FEDERAU, F. *Der zweite Weltkrieg—seine Finanzierung in Deutschland*. Tübingen: Rainer Wunderlich, Hermann Leins, 1962. Pp. 67. DM 29.50.
- FRICKE, W. *Zentralisierung und Dezentralisierung des öffentlichen Einkaufs—Grundfragen der Organisation des Beschaffungswesens*. Heidelberg: Quelle & Meyer, 1961. Pp. 135. DM 18.
- GANDENBERGER, O. *Die Ausschreibung—Organisierte Konkurrenz um öffentliche Aufträge*. Heidelberg: Quelle & Meyer, 1961. Pp. 288. DM 28.
- GUTOWSKI, A. *Konstruktions- und Entwicklungsaufträge—Ein Beitrag zur Beschaffungspolitik der öffentlichen Hand*. Heidelberg: Quelle & Meyer, 1960. Pp. 227. DM 21.
- HANC, G. *The United States savings bond program in the postwar period*. Occas. paper no. 81. New York: Nat. Bur. Econ. Research, 1962. Pp. xiv, 108. \$1.50.
- JOHANSEN, L. *Offentlig Økonomikk*. Oslo: Oslo Univ. Press, 1962. Pp. ix, 108.
- REIN, B. W. *An analysis and critique of the Union financing of the Civil War*. Honors thesis no. 12. Amherst: Amherst College Press, 1962. Pp. 64. Paper, 95¢.
- SPANGLER, R. C. *Expenditure projections. Revenue projections*. Honolulu: Econ. Research Center, Univ. of Hawaii, 1961. Pp. 20; 7, mimeo.
- SPOTO, L., comp. *Indice analitico-alfabetico per materie e per nomi della collezione Storia della finanza pubblica*. Padua: CEDAM, 1962. Pp. 229. L. 3.500.
- WELTER, E. *Der Staat als Kunde—Öffentliche Aufträge in der Wettbewerbsordnung*. Heidelberg: Quelle & Meyer, 1960. Pp. 399. DM 34.
- Gegenwartsprobleme des öffentlichen Haushalts*. Schriftenreihe der Hochschule Speyer, vol. 12. Berlin: Duncker & Humblot, 1962. Pp. 183. DM 24.80.
- Contributions by several authors.
- National budget und Wirtschaftspolitik. Hannover: Verlag f. Literatur und Zeitgeschehen, 1962.
- Revenue act of 1962. Hearings before the Senate Committee on Finance, 87th Cong., 2nd sess., April 2, 1962. Pt. 1. Washington: Supt. Docs., 1962. Pp. 465.
- Revenue act of 1962—a report by the House Committee on Ways and Means, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962.

International Economics

- ALPTÜRK, N. How to realize rapid economic growth of underdeveloped countries and a world common market. Ankara: Ankara Basim ve Ciltevi, 1962. Pp. 30.
- BASCH, A. The future of foreign lending for development. Ann Arbor: Center for Research on Econ. Develop., Univ. of Michigan, 1962. Pp. 45. \$2.
- BERTOLINO, A. Cooperazione internazionale e sviluppo economico. Il pensiero econ. n.s. no. 6. Florence: La Nuova Italia, 1961. Pp. 198. L. 2.000.
- BOURGUINAT, H. Espace économique et intégration européenne—essai de détermination de l'incidence du Marché Commun sur les inégalités régionales de développement. Observation econ., no. 17. Paris: Sedes, 1961. Pp. ix, 343. NF 28.
- CAMPBELL, A. AND THOMPSON, D. Common Market law—texts and commentaries. South Hackensack, N.J.: Fred B. Rothman; London: Stevens & Sons, 1962. Pp. xxii, 487. \$11.50.
- CARNEIRO, O. A. D. Dois ensaios sobre economia internacional. Recife: Comissão de Desenvolvimento Econ. de Pernambuco, 1961. Pp. 116.
- DUPUIGRENET-DESROUSSILLES, G. Niveaux de vie et coopération économique dans L'Europe de L'Ouest. Paris: Presses Univ. de France, 1962. Pp. xii, 189. Paper, NF 12.
- FATOUROS, A. A. Government guarantees to foreign investors. New York and London: Columbia Univ. Press, 1962. Pp. ix, 411. \$12.
- FAYERWEATHER, J. Facts and fallacies of international business. New York: Holt, Rinehart and Winston, 1962. Pp. vi, 184. \$3.
- GOWDA, K. V. Keynes-Triffin plans and international liquidity. A *Kautilya* monogr. Mysore: Univ. of Mysore, 1962. Pp. viii, 34.
- HASAN, P. Deficit financing and capital formation—the Pakistan experience 1951-59. Karachi: Inst. Develop. Econ., 1962. Pp. 97. Rs 5.
- HUGHES, W. Canada and the European Common Market. Occas. paper no. 1. Vancouver, B.C.: Faculty of Commerce and Bus. Admin., Univ. of British Columbia, 1962. Pp. 35.
- KEATING, K. B. Survey of trade relations between the United States and Common Market nations. 87th Cong., 2nd sess. Senate doc. no. 81. Washington: Supt. Docs., 1962. Pp. 54.
- LUBELL, H. The Soviet oil offensive and inter-bloc economic competition. RM-2812-PR. Santa Monica: RAND, 1961. Pp. 82.
- LUTZ, F. A. The problem of international economic equilibrium, Professor F. de Vries Lectures. Amsterdam: North-Holland Pub. Co., 1962. Pp. 75. Paper, \$1.75.
- MEADE, J. E. UK, Commonwealth and Common Market. Hobart paper 17. London: Inst. of Econ. Affairs, 1962. Pp. 52. 3s. 6d.
- MEYER, F. V. The terms of trade. Copenhagen: Munksgaard, 1962. Pp. 160. Paper, DKr. 28.
- MICHAELY, M. Concentration in international trade. Contrib. to econ. analysis no. 28. Amsterdam: North-Holland Pub. Co., 1962. Pp. 167. \$5.
- MITCHELL, J. M. Les exportations françaises aux États-Unis—étude et recommandations. Paris: Éd. M.-Th. Génin, Lib. de Médecis, 1961. Pp. 198. NF 20.
- MUND, V. A. Domestic dumping and the development of new industry in Hawaii. Honolulu: Econ. Research Center, Univ. of Hawaii, 1962. Pp. 24, mimeo.
- PAETZMANN-DULON, E., HEINEKE, R. AND HENKE, H. Der Verbrauch von Gemüse und Obst in Nordwesteuropa und seine Bedeutung für die Absatzmöglichkeiten der Mittelmeerländer. Kieler stud. no. 58. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1961. Pp. xiv, 312. DM 40.
- SABA, E. S. The foreign exchange systems of Lebanon and Syria, 1939-1957. Beirut: American Univ. of Beirut, 1961. Pp. xv, 229.

- SENF, P., NEUMARK, F. AND OTHERS. *La coordination des politiques conjoncturelles en Europe*. Cahiers I.S.E.A., No. 118, ser. HS, no. 6. Paris: Inst. Sci. Econ. Appliquée, 1962. Pp. 140.
- STEUER, F. A. The contribution of Switzerland to the economic and social development of low-income countries. Winterthur: P. G. Keller, [1961.] Pp. 62.
- URQUIDI, V. L. Free trade and economic integration in Latin America—the evolution of a common market policy. Transl. from Spanish by M. M. Urquidi. Berkeley: Univ. of California Press, 1962. Pp. xi, 190. Paper, \$3.75.
First pub. Mexico, 1960. Reviewed in A.E.R. March 1961.
- VANEK, J. The balance of payments, level of economic activity and the value of currency—theory and some recent experiences. Three lectures presented at the Grad. Inst. of Internat. Stud. in Geneva. Geneva: E. Droz, 1962. Pp. 36.
- WARD, B. The interplay of East and West—points of conflict and cooperation. With a new epilogue. The Sir Edward Beatty Memorial lectures. New York: W. W. Norton, 1962. First pub., 1957. Pp. 159. Paper, \$1.25.
- WASSERMAN, M. J. AND HULTMAN, C. W. Modern international economics—a balance of payments approach. New York: Simmons-Boardman, 1962. Pp. x, 494. \$7.75.
- ZOOK, P. D., ED. Foreign trade and human capital. Dallas: Southern Methodist Univ. Press, 1962. Pp. viii, 102. \$3.
- Africa and the United States—images and realities. Final report—8th National Conference, U. S. National Commission for UNESCO, arranged in cooperation with Boston University, Boston, October 22-26, 1961. [New York: Columbia Univ. Press for UNESCO], s.d. Pp. 97.
- The Battle act in new times—Mutual Defense Assistance Control act of 1951. 15th rept. to Cong. Dept. of State pub. no. 7230. Washington: Supt. Docs., 1962. Pp. 54. 25¢.
- Bretton Woods Agreements act amendment. Hearings before the House Committee on Banking and Currency, 87th Cong., 2nd sess., Feb. 27 and 28, 1962. Washington: Supt. Docs., 1962. Pp. 165.
- Conference on development programming held in Murree, Pakistan, June, 1960. Murree: CENTO, s.d. Pp. 181.
- Economic and social consequences of disarmament. Report of the secretary-general transmitting the study of his consultative group. UN pub. no. 62.IX.1. New York: U.N. Dept. Econ. and Soc. Affairs, 1962. Pp. ix, 66. 75¢.
- The entry of Great Britain into the European Economic Community. Pub. no. 34. Brussels: European League for Econ. Co-op., 1962. Pp. 32.
- The flow of financial resources to countries in course of economic development in 1960. Paris: Org. for Econ. Co-op. and Develop., 1962. Pp. 43. 75¢.
- Foreign assistance act of 1962. Hearings before the House Committee on Foreign Affairs, 87th Cong., 2nd sess., Mar. 14-19, 1962. Pt. 1. Washington: Supt. Docs., 1962. Pp. 204.
- The future of United States policy for the West. A statement by the NPA Committee on International Policy. Spec. rept. no. 60. Washington: Nat. Planning Assoc., 1962. Pp. 14. 50¢.
- Impact of imports and exports on employment—agricultural products, chemicals, oil, machinery, motion pictures, transportation, and other industries. Hearings before the Subcommittee on the Impact of Imports and Exports on American Employment of the House Committee on Education and Labor, 87th Cong., 1st and 2nd sess., Nov. 27-30; Dec. 1-5, 1961 and Jan. 5, 1962. Pt. 8. Washington: Supt. Docs., 1962. Pp. 1055.
- Investing & licensing conditions in 40 countries. New York: Bus. Internat., 1962. Pp. 207. \$75.
- 30 Management guides for foreign operations. New York: Bus. Internat. Corp., 1962. Pp. 32. \$30.
- A new trade policy for the United States. A statement on national policy by the CED Research and Policy Committee. New York: Com. for Econ. Develop., 1962. Pp. 37. \$1.

North American trade policy for the nineteen sixties. Report on a two-year study. Toronto: Canadian Inst. of Internat. Affairs; Boston: World Peace Foundation, 1962. Pp. 14.

The perspective of Canadian-American relations: a statement by the Canadian-American Committee. Washington: Nat. Planning Assoc. (U.S.A.) and Private Planning Assoc. of Canada. Pp. 15. 75¢.

Statistical yearbook 1961. 13th issue. Stat. Office, United Nations, Dept. Econ. and Soc. Affairs. In French and English. New York: Sales Sec., U.N., 1962. Pp. 678. \$10; paper, \$8.

Trade agreements with the European Economic Community, the United Kingdom, Norway and Sweden. Message from the President of the United States transmitting copies of trade agreements with the European Economic Community, the United Kingdom, Norway, and Sweden, including schedules signed on behalf of the United States on Mar. 5 and Mar. 7, 1962 and reporting actions taken with respect to peril points. 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 242.

The World Bank in Africa—a summary of activities. Washington: Internat. Bank for Reconstruction and Develop., 1961. Pp. 70.

Business Finance; Investment and Security Markets; Insurance

ATHEARN, J. L. Risk and insurance. New York: Appleton-Century-Crofts, 1962. Pp. xviii, 526. \$6.95.

CENTER, C. C. AND HEINS, R. M., ED. Insurance and government. New York: McGraw-Hill, 1962. Pp. vii, 494. \$9.95.

Papers presented at a Symposium on Insurance and Government at the University of Wisconsin.

CORMIER, F. Wall Street's shady side. Washington: Public Affairs Press, 1962. Pp. viii, 198. \$4.50.

HESS, A. P. AND WINN, W. J. The value of the call privilege. [Philadelphia]: Univ. of Pennsylvania, 1962. Pp. vii, 162.

MEAD, S. B. Mutual fund and investment company performance in the fifties. Occas. paper no. 9. East Lansing: Bur. Bus. and Econ. Research, Grad. School Bus. Admin., Michigan State Univ., 1961. Pp. 85. \$1.

MÖLLER, B. Svensk aktiemarknad. (The Swedish stock market.) Goteborg: Nationalekonomiska Inst., 1962. Pp. 276.

SCHWARTZ, E. Corporation finance. New York: St. Martin's Press, 1962. Pp. xiv, 370.

WALTER, J. E. The investment process—as characterized by leading life insurance companies. Boston: Div. of Research, Grad. School of Bus. Admin., Harvard Univ., 1962. Pp. xx, 491. \$7.50.

WHITE, W. H. The changing criteria in investment planning. Washington: Brookings Inst., 1962. Pp. 24. Single copies free.

Originally printed in *Variability of Private Investment in Plant and Equipment*, Joint Econ. Committee, 87th Cong., 2nd sess., Pt. 2 (1962).

WHITE, W. H. Inventory investment and the rate of interest. Reprint no. 57. Washington: Brookings Inst., 1962. Pp. 45. Single copies free.

Originally appeared in *Banca Nazionale del Lavoro Quart. Rev.*, June, 1961.

Business Organization; Managerial Economics; Marketing; Accounting

ANTON, H. R. Accounting for the flow of funds. Boston: Houghton Mifflin, 1962. Pp. xi, 131. Paper, \$1.95.

BAKER, R. L., ED. Business leadership in a changing world—a report of the International Industrial Conference at San Francisco September 11-15, 1961, sponsored by National Industrial Conference Board and Stanford Research Institute. New York: McGraw-Hill, 1962. Pp. xii, 463. \$7.75.

- BECKMAN, T. N. Credits and collections—management and theory. New York: McGraw-Hill, 1962. Pp. x, 660. \$8.50.
- BECKMAN, T. N. AND DAVIDSON, W. R. Marketing. 7th ed. New York: Ronald Press, 1962. Pp. viii, 873. \$8.
- COREY, E. R. Industrial marketing—cases and concepts. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. x, 469. \$7.95.
- DIETERLE, D. L., SEAWELL, L. V. AND OTHERS. C.P.A. coaching. Vol. 1, Basic handbook. Vol. 2, sec. A, Accounting practice I; sec. B, Accounting practice II; sec. C, Accounting theory; sec. D, Auditing; sec. E, Commercial law. Vol. 3, Solutions (to accompany Vol. 2, in 5 sec.) New York: Houghton Mifflin, 1962. Pp. vol. 1, 148; vol. 2, 1185; vol. 3, 437. Paper, \$28.75 complete set.
- FUCHS, V. R. Changes in the location of manufacturing in the United States since 1929. Econ. census stud., 1. New Haven: Yale Univ. Press, 1962. Pp. xx, 566. \$10.
- GREENBERGER, M., ED. Management and the computer of the future. Cambridge: M.I.T. Press; New York: Wiley, 1962. Pp. xxvi, 340. \$6.
- HAIRE, M., ED. Organization theory in industrial practice—a symposium of the Foundation for Research on Human Behavior. New York: Wiley, 1962. Pp. x, 173. \$5.75.
- HOLDEN, P. E., SHALLENBERGER, F. K. AND DREHM, W. A. Selected case problems in industrial management. 2nd ed. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xi, 384. \$3.95.
- IMSE, T. P. The professionalization of business management. New York: Vantage Press, 1962. Pp. 102. \$3.
- LEONARD, W. P. The management audit—an appraisal of management methods and performance. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xv, 238. \$15.
- MACE, M. L. AND MONTGOMERY, G. G., JR. Management problems of corporate acquisitions. Boston: Div. of Research, Grad. School of Bus. Admin., Harvard Univ., 1962. Pp. xi, 276. \$4.
- MOSSMAN, F. H. Differential distribution cost and revenue analysis—a new approach. Marketing and transportation paper no. 10. East Lansing: Bur. Bus. and Econ. Research, Grad. School Bus. Admin., Michigan State Univ., 1962. Pp. 32. Paper, \$1.
- NEMMERS, E. E. Managerial economics—text and cases. New York: Wiley, 1962. Pp. xv, 498. \$10.25.
- NØRGARD, L. Tankfartens etablerings- og introduksjonsperiode i norsk skipsfart 1912-1913 og 1927-1930. (Establishing and introduction periods in the Norwegian tanker trade 1912-1913 and 1927-1930.) Bergen: Inst. for Shipping Research, Norwegian School of Econ. and Bus. Admin., 1961. Pp. 79.
- PENNYCUICK, K. Industrial diagnosis. New York: Wiley, 1961. Pp. 191. \$4.75.
- SAYIGH, V. A. Entrepreneurs of Lebanon—the role of the business leader in a developing economy. Cambridge: Harvard Univ. Press, 1962. Pp. xiv, 181. \$4.25.
- VANDELL, R. F. AND VANCIL, R. F. Cases in capital budgeting. Homewood, Ill.: Irwin, 1962. Pp. xxv, 450. \$7.
- WEBER, K. Amerikanische Standardkostenrechnung—ein Überblick. Winterthur: P. G. Keller, 1960. Pp. x, 380.
- WHEELER, B. O. Business—an introductory analysis. Workbook to accompany text. New York: Harper, 1962. Pp. xiii, 677; vii, 243. \$7.50; \$2.95.
Instructor's manual prepared to accompany text.

Industrial Organization; Government and Business; Industry Studies

- BACKMAN, J. The economics of the electrical machinery industry. New York: New York Univ. Press, 1962. Pp. xxiii, 374. \$10.
- BISHOP, D. W. Railroad decisions of the Interstate Commerce Commission: their guiding principles. A doctoral dissertation. Washington: Catholic Univ. of America Press, 1961. Pp. xi, 193. Paper, \$3.25.

- BÜSCH, W. Die Rückfahrtermässigung im Personenverkehr als ökonomisches Problem. Zürich: Polygraphischer Verlag, 1962. Pp. xi, 121. 16 sw. fr.
- CARR, J. C. AND TAPLIN, W. WITH WRIGET, A. E. G. History of the British steel industry. Cambridge: Harvard Univ. Press, 1962. Pp. xii, 632. \$11.
- EDWARDS, C. D. Foreign anti-trust laws in the 1960's. Reprint no. 56. Washington: Brookings Inst., 1962. Pp. 12. Single copies free.
- EDWARDS, C. D., RAHL, J. A. AND ROWE, F. M. Public policy toward competition—new antitrust directions. New York: Nat. Indus. Conf. Board, 1962. Pp. 44. \$2; \$5, non-associates.
- HAMMOND, R. J. Food. Vol. 3, Studies in administration and control. History of the second world war, U.K. civil ser. London: H.M. Stat. Off., and Longmans, Green; New York: British Info. Svces, distrib., 1962. Pp. xiii, 836. \$14.
- HAWKINS, E. K. Roads and road transport in an underdeveloped country—a case study of Uganda. London: H.M. Stat. Office; New York: British Info. Svces, distrib., 1962. Pp. 263. \$8.40.
- HEWLETT, R. G. AND ANDERSON, O. E., JR. The new world, 1939/1946. Vol. 1, A history of the United States Atomic Energy Commission. University Park: Pennsylvania State Univ. Press, 1962. Pp. xv, 766. \$5.50.
- MILLER, J. P., ED. Competition, cartels and their regulation. Stud. in indus. econ. no. 4. Amsterdam: North-Holland Pub. Co., 1962. Pp. 428. \$9.80.
- MOXTER, A. Der Einfluss von Publizitätsvorschriften auf das unternehmerische Verhalten. Cologne and Opladen: Westdeutscher Verlag, 1962. Pp. x, 239. DM32.
- PECK, M. J. AND SCHERER, F. M. The weapons acquisition process: an economic analysis. Boston: Div. of Research, Grad. School of Bus. Admin., Harvard Univ., 1962. Pp. xxxii, 736. \$10.
- WARNER, W. L. The corporation in the emergent American society. Ford distinguished lectures vol. 4. New York: Harper, 1962. Pp. xviii, 64. \$3.
- WEIN, H. H. Domestic air cargo: its prospects. Occas. paper no. 7. East Lansing: Bur. of Bus. and Econ. Research, Grad. School of Bus. Admin., Michigan State Univ., 1962. Pp. 96. \$1.
- WILLIAMS, E. W., JR. WITH NOVAK, G. AND HUNTER, H. Freight transportation in the Soviet Union—including comparisons with the United States. NBER no. 76, gen. ser. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1962. Pp. xxi, 221. \$4.50.
- ZICKEL, J. Energiewirtschaft in Spanien. Basel: Kyklos-Verlag; Tübingen: J. C. B. Mohr (Paul Siebeck), 1962. Pp. ix, 179. DM 20.50; paper, DM 16.80.
- The communications challenges in the decade of the 60's. New York: Bozell & Jacobs, 1962. Pp. 112.
- The Israel Merchant Marine—an economic appraisal. Jerusalem: Bank of Israel, Research Dept., 1962. Pp. xvi, 122. IL 3.
- Legislation to strengthen penalties under the antitrust laws. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 87th Cong., 1st sess., Sept. 6 and Oct. 2, 1961. Washington: Supt. Docs., 1962. Pp. 155.
- Statistics of manufacturing industries. Electrical machinery: 1. New York: Nat. Indus. Conf. Board, 1962. Pp. 63. \$2.50; \$12.50, non-associates.
- Study of the domestic textile industry. Hearings before a Subcommittee of the Senate Committee on Commerce, 87th Cong., 2nd sess., Jan. 16 and 17, 1962. Washington: Supt. Docs., 1962. Pp. 197.
- A study of small business in the electronics industry. Small Bus. Admin. Washington: Supt. Docs., 1962. Pp. 229.
- Traffic survey of Beypore Port. New Delhi: Nat. Council of Applied Econ. Research, 1962. Pp. ix, 111. Rs 7.50.

Land Economics; Agricultural Economics; Economic Geography; Housing

- BADOUIN, R. *Agriculture et équilibre économique*. Observation écon. no. 16. Paris: Sedes, 1961. Pp. 271. NF 25.
- CASTLE, E. N. AND BECKER, M. H. *Farm business management—the decision-making process*. New York: Macmillan, 1962. Pp. xvi, 423. \$6.
- DUGGAR, G. S., ED. *The new renewal—the proceedings of a civic seminar on the next big tasks in urban renewal*, San Francisco, January 23 to March 13, 1961. Berkeley: Bur. Pub. Admin., Univ. of California, 1961. Pp. xix, 158. Paper, \$3.75.
- FRANCO, G. *La programmazione lineare per un modello di sviluppo regionale dell'agricoltura*. Milan: A. Giuffrè, 1962. Pp. viii, 132. L. 1,000.
- GREER, S. *The emerging city—myth and reality*. New York: Free Press of Glencoe, 1962. Pp. vi, 232. \$5.75.
- HELGESON, A. *Farms in the cutover—agricultural settlement in Northern Wisconsin*. Madison: State Historical Society of Wisconsin for Dept. of History, Univ. of Wisconsin, 1962. Pp. vii, 184. \$4.25.
- HUNG, F. C. *Current economic status of the Hawaiian sugar industry—with special reference to the general excise tax*. Honolulu: Econ. Research Center, Univ. of Hawaii, 1962. Pp. 60, mimeo.
- KNEESE, A. V. *Water pollution—economic aspects and research needs*. Baltimore: Johns Hopkins Press for Resources for the Future, 1962. Pp. ix, 107. Paper, \$1.75.
- LUNDQUIST, L. R., JOHNSON, S. AND MOFFETT, R. E. *Economic analysis of possible changes in the special milk program*. Bull. no. 370. [Storrs]: College of Agric. Experiment Station, Univ. of Connecticut, 1962.
- MAISEL, S. J. *Housing needs in Hawaii*. Honolulu: Econ. Research Center, Univ. of Hawaii, 1961. Pp. vi, 65.
- MARK, S. M. AND NAYA, S. *Current economic condition of the Hawaiian pineapple industry*. Honolulu: Econ. Research Center, Univ. of Hawaii, 1962. Pp. vi, 53, mimeo.
- MCCRONE, G. *The economics of subsidising agriculture—a study of British policy*. Univ. of Glasgow soc. and econ. stud., n.s. no. 1. Toronto: Univ. of Toronto Press, 1962. Pp. 189. \$3.50.
- PUGH, O. S., KING, R. L. AND PUTNAM, W. F. *The food and kindred products industries of South Carolina: their position, problems and prospects*. Columbia: School of Bus. Admin., Univ. of South Carolina for Small Bus. Admin., 1962. Pp. xvi, 252. \$2.
- STRAUS, M. W. *How to meet the West's needs for water and power*. An authoritative inside account of where we succeed and how we delay solving our number one natural resource problem. Together with technical summaries of the United Western Investigations and the Task Force Report of 1961 on Pacific Northwest, Pacific Southwest Extra High Voltage Common Carrier Interconnections. Washington: Pub. Affairs Inst., 1962. Pp. 72. \$1.
- WENDT, P. F. *Housing policy—the search for solutions: a comparison of the United Kingdom, Sweden, West Germany, and the United States since World War II*. Berkeley: Univ. of California Press for Inst. Bus. and Econ. Research, Univ. of California, 1962. Pp. xii, 283. \$6.
- The migratory farm labor problem in the United States—second report. Subcommittee on Migratory Labor of the Senate Committee on Labor and Public Welfare, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 79.
- Statistical handbook of the sheep and wool industry. Canberra: Bur. Agric. Econ., 1961. Pp. ix, 166.

Labor Economics

- ALLISTON, J. R. *Implications of automation and other technological developments; a selected annotated bibliography*. BLS bull. no. 1319. Washington: Supt. Docs., 1962. Pp. 136.

- GARBARINO, J. W. Wage policy and long-term contracts. Washington: Brookings Inst., 1962. Pp. xi, 145. \$3; paper, \$2.
- LEVINSON, H. M. Collective bargaining in the steel industry: pattern setter or pattern follower? Ann Arbor: Inst. of Lab. and Indus. Rel., Univ. of Michigan—Wayne State Univ., 1962. Pp. 99. \$1.
- PROCHAZKA, Z. The labor force of Bulgaria. Bur. Census, Internat. pop. stat. rept., ser. P-90, no. 16. Washington: Supt. Docs., 1962. Pp. ii, 38. 30¢.
- REES, A. The economics of trade unions. Chicago: Univ. of Chicago Press, 1962. Pp. xiv, 208. \$3.50.
- SOMERS, G. G., ed. Proceedings of the fourteenth annual meeting—Industrial Relations Research Association, New York City, December 28 and 29, 1961. Madison: Indus. Rel. Research Assoc., 1962. Pp. x, 437. \$4.
- The benefits and problems incident to automation and other technological advances. A report to the President by the President's Advisory Committee on Labor-Management Policy. Washington: Supt. Docs., 1962. Pp. 25.
- Économie du travail. Cahiers I.S.E.A., no. 122, ser. AB, no. 2. Paris: Inst. Sci. Écon. Appliquée, 1962. Pp. 239.
- Contributions by: S. Stroumiline, N. Federici, F. Archibugi, M. David, R. Pressat, A. Gout and A. Tiano.
- Escala móvel de salarios e suas repercussões econômicas. Rio de Janeiro: Confederação Nacional da Indústria, 1961. Pp. 75.
- Gli effetti delle variazioni di produttività sul sistema dei prezzi e dei salari. Atti del quarto Convegno di Studi di Economia e Politica del Lavoro, Roma-Palazzo Barberini. May 18-20, 1961. Rome: Confedazione Italiana Sindacati Lavoratori, 1962. Pp. 307.
- Migratory labor. Hearings before the Subcommittee on Migratory Labor of the Senate Committee on Labor and Public Welfare, 87th Cong., 1st and 2nd sess. Vol. 2, pt. 1, May 17 and 18, 1961; pt. 2, Feb. 8 and 9, 1962. Washington: Supt. Docs., 1962. Pp. 365.
- Report of the Director-General. Pt. 1, Older people: work and retirement. Pt. 2, Activities of the I.L.O. International Labour Conference, Forty-sixth Session, 1962. Geneva: Internat. Lab. Office, 1962. Pp. iv, 98; vi, 96. \$1.50.

Population; Welfare Programs; Consumer Economics

- BEIJER, G., FRIJDA, N. H., HOFSTEDE, B. P. AND WENTHOLT, R. Characteristics of overseas migrants. The Hague: Govt. Printing and Pub. Office, 1961. Pp. xv, 319. f 20.
- CARLSON, V. Economic security in the United States. New York: McGraw-Hill, 1962. Pp. xi, 225. \$6.50.
- EASTERLIN, R. A. The American baby boom in historical perspective. NBER occas. paper no. 79. New York: Nat. Bur. Econ. Research, 1962. Pp. 60. \$1.
- KAFOGLIS, M. Z. Welfare economics and subsidy programs. Soc. sci. monogr. no. 11. Gainesville: Univ. of Florida Press, 1961. Pp. 83. \$2.
- KATONA, G., LININGER, C. A., MORGAN, J. N. AND MUELLER, E. 1961 survey of consumer finances. Monogr. no. 24. Ann Arbor: Survey Research Center, Inst. for Soc. Research, Univ. of Michigan, 1962. Pp. xv, 150.
- SANFORD, R. Consumer protection programs: comparative analysis. Honolulu: Econ. Research Center, Univ. of Hawaii, 1962. Pp. 44, mimeo.
- SIMPSON, H. S., ED. The changing American population. A report of the Arden House Conference. New York: Inst. of Life Insurance, 1962. Pp. 111.
- WITTE, E. E. The development of the Social Security act: a memorandum on the history of the Committee on Economic Security and drafting and legislative history of the Social Security Act. Madison: Univ. of Wisconsin Press, 1962. Pp. xvi, 220. \$5.75.
- Dødeligheten og dens Årsaker i Norge 1856-1955. (Trend of mortality and causes of death in Norway 1856-1955.) Samfunnsøkonomiske stud. no. 10. Oslo: Central Bur. of Stat. of Norway, 1961. Pp. 246. NKr. 8.50.

Government expenditures on health and social welfare, Canada—1927 to 1959. Soc. Security ser., memo. 16. Ottawa: Research and Stat. Div., Dept. of Nat. Health and Welfare, 1961. Pp. vii, 95.

Poverty and deprivation in the United States. Washington: Conf. on Econ. Progress, 1962. Pp. 97. 50¢.

Psychological research on consumer behavior. Ann Arbor: Foundation for Research on Human Behavior, 1962. Pp. 74. \$2.

Related Disciplines

AIMARD, G. Durkheim et la science économique—l'apport de sa sociologie à la théorie économique moderne. Paris: Presses Univ. de France, 1962. Pp. 317. NF 18.

BRONFENBRENNER, M. Academic encounter—the American University in Japan and Korea. New York: Free Press of Glencoe; East Lansing: Bur. of Soc. and Pol. Research, Michigan State Univ., 1961. Pp. ix, 260. \$6.

CARNEGIE, A. The gospel of wealth—and other timely essays. Ed. by E. C. Kirkland. Cambridge: Belknap Press of Harvard Univ. Press, 1962. Pp. xx, 239. \$4.50. First pub. by Century Co., 1900.

CARR, A. Z. John D. Rockefeller's secret weapon. New York: McGraw-Hill, 1962. Pp. x, 383. \$6.95.

DAVIS, F. J., FOSTER, H. H., JR., JEFFERY, C. R. AND DAVIS, E. E. Society and the law—new meanings for an old profession. New York: Free Press of Glencoe, 1962. Pp. vi, 488. \$6.95.

DAVIS, J. A. WITH GOTTLIEB, D., HAJDA, J., HUSON, C. AND SPAETH, J. L. Stipends and spouses—the finances of American arts and science graduate students. Chicago: Univ. of Chicago Press, 1962. Pp. viii, 294. \$5.

DE GRAZIA, S. Of time, work, and leisure. New York: Twentieth Century Fund, 1962. Pp. 559. \$6.

DIESING, P. Reason in society—five types of decisions and their social conditions. Urbana: Univ. of Illinois Press, 1962. Pp. 262. \$5.75.

EINAUDI, L. Prediche inutili. Opere di Luigi Einaudi, 2nd ser., vol. 2. Turin: G. Einaudi Ed., 1962. Pp. ix, 423. L. 3.000.

FEBVRE, L. Pour une histoire à part entière. Paris: S.E.V.P.E.N., 1962. Pp. 859.

HARRIS, S. E. The economics of the political parties—with special attention to Presidents Eisenhower and Kennedy. New York: Macmillan, 1962. Pp. xxxiv, 382. \$7.

KAUTSKY, J. H., ED. Political change in underdeveloped countries—nationalism and Communism. New York: Wiley, 1962. Pp. xv, 347. Paper, \$3.95.

SCHWARTZ, H., ED. Russia enters the 1960's: a documentary report on the 22nd Congress of the Communist Party of the Soviet Union. Philadelphia: Lippincott, 1962. Pp. ix, 278. \$6.50.

WILSON, F. G. A theory of public opinion. Inst. Philos. and Hist. stud., vol. 2. Chicago: Regnery, 1962. Pp. xii, 308. \$7.

WOOLF, H., ED. Quantification—a history of the meaning of measurement in the natural and social sciences. Indianapolis: Bobbs-Merrill, 1961. Pp. 224.

ZEIGLER, H. The politics of small business. Washington: Public Affairs Press, 1961. Pp. vii, 150. \$3.25.

Catalogue de la bibliothèque du Professeur Gustave Schelle de l'Université du Commerce D'Otaru. Otaru, Japan: Otaru Univ. of Commerce, 1962. Pp. 116. \$2.

Chapters in Western civilization. Ed. by the Contemporary Civilization Staff of Columbia College, Columbia Univ. Vol. 2, 3rd ed. New York and London: Columbia Univ. Press, 1962. Pp. viii, 477. \$6.

Indice cinquantennale 1911-1960. Vol. 1, indice per autori, indice delle pubblicazioni recensite. Rome: Under the direction of *Rivista di Politica Economica*, 1961. Pp. xxiv, 653. L. 3.500.

PERIODICALS

General Economics; Methodology

- ARCELLI, M. *Economia moderna e logica moderna*. *L'industria*, 1961 (4), pp. 505-25.
- DE SCHWEINITZ, K., JR. On the determinism of the Marxian system. *Soc. Research*, Spring 1962, pp. 37-49.
- KELLENBENZ, H. *Ekonomisk historia och ekonomisk teori*. *Ekon. Samfundets Tids.*, 1962, 15 (1), pp. 20-31.
- LANCASTER, K. J. The scope of qualitative economics. *Rev. Econ. Stud.*, Feb. 1962, pp. 99-123.
- PAPANDREOU, A. G. *L'economia come scienza*. *L'industria*, 1961 (4), pp. 526-51.
- POLLIS, A. AND KOSLIN, B. L. On the scientific foundations of marginalism. *Am. Jour. Econ. Soc.*, Apr. 1962, pp. 113-30.
- STIGLER, G. J. Henry L. Moore and statistical economics. *Econometrica*, Jan. 1962, pp. 1-21.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- AL'TER, L. The latest bourgeois theory of "economic growth." *Prob. Econ.*, Mar. 1962, pp. 31-42.
- BLACK, J. The technical progress function and the production function. *Economica*, May 1962, pp. 166-70.
- BORCH, K. Uncertainty and market equilibrium. *Metroeconomica*, Dec. 1961, pp. 139-55.
- BRAKEL, L. A comparison of productivity and recent productivity trends in various countries. *Rev. Econ. Stat.*, May 1962, pp. 123-33.
- CHASE, S. B. JR. Tax credits for investment spending. *Nat. Tax Jour.*, Mar. 1962, pp. 32-52.
- CHAKRAVARTY, S. The existence of an optimum savings program. *Econometrica*, Jan. 1962, pp. 178-87.
- CORD, J. A small model of semi-annual employment in the United States. *Rev. Econ. Stat.*, Feb. 1962, pp. 58-63.
- DAVIS, H. B. Imperialism and labor: an analysis of Marxian views. *Sci. and Soc.*, Winter 1962, pp. 26-45.
- DEMSETZ, H. The effect of consumer experience on brand loyalty and the structure of market demand. *Econometrica*, Jan. 1962, pp. 22-33.
- DENISON, E. F. United States economic growth. *Jour. Bus. Univ. Chicago*, Apr. 1962, pp. 109-21.
- DERYMES, P. J. A multisectoral model of growth. *Quart. Jour. Econ.*, May 1962, pp. 264-78.
- DOODY, F. S. Research in the process of innovation. *Boston Univ. Bus. Rev.*, Spring 1962, pp. 13-21.
- ECKHAUS, R. S. AND LEFEBER, L. Capital formation: a theoretical and empirical analysis. *Rev. Econ. Stat.*, May 1962, pp. 113-22.
- FERGUSON, C. E. Cournot points and the conflict curves. *Rev. Econ. Stud.*, Feb. 1962, pp. 151-53.
- FISHER, J. A. An analysis of consumer durable goods expenditures in 1957. *Rev. Econ. Stat.*, Feb. 1962, pp. 64-71.

- FOURASTIÉ, J. Remarques sur l'introduction de la notion de progrès technique dans la science économique. *Écon. Appliquée*, Apr.-Sept. 1961, pp. 173-88.
- FUCHS, V. R. The determinants of the redistribution of manufacturing in the United States since 1929. *Rev. Econ. Stat.*, May 1962, pp. 167-77.
- FURUBOTN, E. G. The adaptability of fixed productive services in the short run. *So. Econ. Jour.*, Apr. 1962, pp. 329-39.
- GOODWIN, C. D. W. Alfred de Lissa and the birth of the multiplier. *Econ. Record*, Mar. 1962, pp. 74-93.
- HARROD, R. F. Dynamic theory and planning. *Kyklos*, 1962 (1), pp. 68-79.
- HEERTJE, A. Prijs Theorie en prijspolitiek van de overheid. *De Economist*, Apr.-May 1962, pp. 321-51.
- HENDERSON, J. P. Inflation and the structure of employment. *So. Econ. Jour.*, Apr. 1962, pp. 340-47.
- HOCH, I. Estimation of production function parameters combining time-series and cross-section data. *Econometrica*, Jan. 1962, pp. 34-53.
- JACOB, H. AND JACOB, M. Preisdifferenzierung bei willkürlicher Teilung des Marktes und ihre Verwirklichung mit Hilfe der Produktdifferenzierung. *Jahrb. f. Nationalök. und Stat.*, Jan. 1962, pp. 1-46.
- JENSEN, H. R., KEHRBERG, E. W. AND THOMAS, D. W. Integration as an adjustment to risk and uncertainty. *So. Econ. Jour.*, Apr. 1962, pp. 378-84.
- KLAPPHOLZ, K. AND MISHAN, E. J. Identities in economic models. *Economica*, May 1962, pp. 117-28.
- KORNAI, J. AND LIPTÁK, T. A mathematical investigation of some economic effects of profit sharing in socialist firms. *Econometrica*, Jan. 1962, pp. 140-61.
- KVASHA, I. AND KRASOVSKII, V. New technology and the planning of capital investments. *Prob. Econ.*, Feb. 1962, pp. 29-37.
- LAWLESS, R. M. AND HAAS, P. R., JR. How to determine the right-size plant. *Harvard Bus. Rev.*, May-June 1962, pp. 97-112.
- LIEBENBERG, M. AND FITZWILLIAMS, J. M. Size distribution of income in 1961. *Surv. Curr. Bus.*, Apr. 1962, pp. 9-16.
- MACHLUP, F. Invention et recherche technique. *Écon. Appliquée*, Apr.-Sept. 1961, pp. 275-96.
- MACHLUP, F. L'offre d'inventeurs et d'inventions. *Écon. Appliquée*, Apr.-Sept. 1961, pp. 225-74.
- MANNE, A. S. Product-mix alternatives: flood control, electric power, and irrigation. *Internat. Econ. Rev.*, Jan. 1962, pp. 30-59.
- McMANUS, M. Numbers and size in Cournot oligopoly. *Yorkshire Bull. Econ. Soc. Research*, May 1962, pp. 14-22.
- MOONITZ, M. Should we discard the income concept? *Accounting Rev.*, Apr. 1962, pp. 175-80.
- NERLOVE, M. AND ARROW, K. J. Optimal advertising policy under dynamic conditions. *Economica*, May 1962, pp. 129-42.
- NEWMAN, P. Production of commodities by means of commodities. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, Mar. 1962, pp. 58-75.
- PHILLIPS, A. Operations research and the theory of the firm. *So. Econ. Jour.*, Apr. 1962, pp. 357-64.
- QUIRK, J. P. AND SAPOSNIK, R. Admissibility and measurable utility functions. *Rev. Econ. Stud.*, Feb. 1962, pp. 140-46.
- RAUNER, R. M. AND STEGER, W. A. Simulation and long-range planning for resource allocation. *Quart. Jour. Econ.*, May 1962, pp. 219-45.
- REITER, S. AND SHERMAN, G. R. Allocating indivisible resources affording external economies or diseconomies. *Internat. Econ. Rev.*, Jan. 1962, pp. 108-35.

- RENSHAW, E. F. The economics of highway congestion. *So. Econ. Jour.*, Apr. 1962, pp. 372-77.
- ROBINSON, J. A model of technical progress. *Riv. di Pol. Econ.*, Feb. 1962, pp. 147-76.
- ROSE, K. Bemerkungen zur Theorie der Kosteninflation. *Jahrb. f. Sozialwissensch.*, 12 (3), pp. 339-53.
- RUIST, E. Production efficiency of the industrial firm—some methods of measurement. *Prod. Meas. Rev.*, Dec. 1961, pp. 3-79.
- SCHMOOKLER, J. Economic sources of inventive activity. *Jour. Econ. Hist.*, Mar. 1962, pp. 1-20.
- SEEBER, N. C. On the classification of inventions. *So. Econ. Jour.*, Apr. 1962, pp. 365-71.
- SHCHEPINOV, M. G. Rates of growth of the national income of the USSR. *Prob. Econ.*, Feb. 1962, pp. 15-20.
- SMETS, H. Une méthode de calcul de la durée de vie des biens durables—application aux véhicules à deux roues. *Cahiers Econ. de Bruxelles*, Apr. 1962, pp. 307-23.
- SMITH, V. L. An experimental study of competitive market behavior. *Jour. Pol. Econ.*, Apr. 1962, pp. 111-37.
- SMITH, V. L. The theory of capital (review article). *Am. Econ. Rev.*, June 1962, pp. 481-91.
- SPRINKEL, B. W. AND WEST, B. K. Effects of capital gains taxes on investment decisions. *Jour. Bus. Univ. Chicago*, Apr. 1962, pp. 122-34.
- STERN, R. M. The price responsiveness of primary producers. *Rev. Econ. Stat.*, May 1962, pp. 202-7.
- SUPPES, P. AND CARLSMITH, J. M. Experimental analysis of a duopoly situation from the standpoint of mathematical learning theory. *Internat. Econ. Rev.*, Jan. 1962, pp. 60-78.
- VARGA, E. Marx's *Capital* and contemporary capitalism. *Prob. Econ.*, Jan. 1962, pp. 54-63.
- VIBE-PEDERSEN, J. Indkomstkredsløbet og den makroøkonomiske teori for indkomstdannelsen og indkomstfordelingen. II. *Nationaløk. Tids.*, 1961, 99 (5-6), pp. 254-85.
- WALTERS, A. A. Some notes on the Cobb-Douglas production function. *Metro-economica*, Dec. 1961, pp. 121-38.
- WRIGHT, D. M. Some notes on ideal output. *Quart. Jour. Econ.*, May 1962, pp. 173-85.
- Advance in salaries as portion of manufacturing payrolls reflects progress in technology. *Surv. Curr. Bus.*, May 1962, pp. 11-13.
- Comparison of British and U.S. unemployment rates. *Mo. Lab. Rev.*, May 1962, pp. 489-501.

Economic History; Economic Development; National Economies

- ALBERTINI, J. M. "L'aide américaine aux pays sous-développés" ou "la vilaine Amérique." *Cahiers Inst. Sci. Econ. Appliquée*, Mar. 1962, pp. 71-104.
- ALT, P. AND SCHNEIDER, M. West Germany's "economic miracle." *Sci. and Soc.*, Winter 1962, pp. 46-57.
- BALOGH, T. Equity and efficiency: The problem of optimal investment in a framework of underdevelopment. *Oxford Econ. Papers*, Feb. 1962, pp. 25-35.
- BARON, A. R. Investment decisions in foreign countries—Austria, an example of a successful development program. *Engin. Econ.*, Spring 1962, pp. 21-34.
- BEIKA, M. Problems of industrial location relating to regional development in Japan. *Kobe Econ. & Bus. Rev.*, 1962, pp. 61-68.
- BHALLA, A. S. On Nurkse's concealed savings potential. *Indian Jour. Econ.*, Apr. 1960, pp. 305-12.
- BHAMBRI, R. S. Enterprise, initiative and economic policy. *Kyklos*, 1962, 15 (2), pp. 401-26.
- BIĆANIĆ, R. The threshold of economic growth. *Kyklos*, 1961 (1), pp. 7-28.

- BIENAYMÉ, A. La théorie des valeurs internationales et son application aux pays en cours de développement. *Rev. d'Econ. Pol.*, Jan.-Feb. 1962, pp. 35-60.
- BOTTOMLEY, A. The role of foreign branch plants in the industrialisation of Singapore. *Malayan Econ. Rev.*, Apr. 1962, pp. 26-36.
- BOWLES, W. D. Soviet Russia as a model for underdeveloped areas. *World Pol.*, Apr. 1962, pp. 483-504.
- CAIRE, G. Syndicalisme ouvrier et sous-développement. Contribution à une étude des rapports entre les structures sociales et l'action économique. *Rev. Econ.*, Mar. 1962, pp. 273-97.
- CHEENERY, H. B. El empleo del análisis interindustrial en la programación económica. *Rev. Econ. Pol.*, Jan.-Apr. 1962, pp. 57-76.
- CHEENERY, H. B. Política de desarrollo y ventajas comparativas. *El Trimestre Econ.*, Apr.-June 1962, pp. 308-43.
- CHEENERY, H. B., SHISHIDO, S. AND WATANABE, T. The pattern of Japanese growth, 1914-1954. *Econometrica*, Jan. 1962, pp. 98-139.
- CROCKETT, J. P. Tax pattern in Latin America. *Nat. Tax Jour.*, Mar. 1962, pp. 93-104.
- DANDEKAR, V. M. Economic theory and agrarian reform. *Oxford Econ. Papers*, Feb. 1962, pp. 69-80.
- DASGUPTA, A. Management challenge in industry. *Asian Econ. Rev.*, Feb. 1962, pp. 151-68.
- DAVIS, K. Population and welfare in industrial societies. *Pop. Rev.*, Jan. 1962, pp. 3-29.
- DE V. GRAAFF, J. Alternative models of South African Growth. *So. Afr. Jour. Econ.*, Mar. 1962, pp. 44-49.
- DU PLESSIS, T. A. Savings and the role of financial intermediaries in South Africa. *Fin. & Trade Rev.*, Dec. 1961, pp. 445-51.
- FEI, J. C. H. A preliminary input-output table for large-scale industries in Pakistan. *Pakistan Develop. Rev.*, Spring 1962, pp. 47-83.
- FINDLAY, R. F. Capital theory and development planning. *Rev. Econ. Stud.*, Feb. 1962, pp. 85-98.
- FUERTES, J. V. Algunos problemas de la estructura y desarrollo de la economía española. *Rev. Econ. Pol.*, Jan.-Apr. 1962, pp. 5-56.
- FURUYA, H. AND INADA, K. Balanced growth and intertemporal efficiency in capital accumulation. *Internat. Econ. Rev.*, Jan. 1962, pp. 94-107.
- GEERTZ, C. The rotating credit association: a "middle rung" in development. *Econ. Develop. and Cult. Change*, Apr. 1962, pp. 241-63.
- GEMMILL, R. F. Prebisch on commercial policy for less-developed countries. *Rev. Econ. Stat.*, May 1962, pp. 198-201.
- GOLUBKOV, P. Problems of collective farm development on the road to Communism. *Prob. Econ.*, Apr. 1962, pp. 3-11.
- HARBISON, F. H. Human resources development planning in modernising economies. *Internat. Lab. Rev.*, May 1962, pp. 435-58.
- HARROD, R. Economic development and Asian regional cooperation. *Pakistan Develop. Rev.*, Spring 1962, pp. 1-22.
- HOLLAND, E. P. Simulation of an economy with development and trade problems, June 1962, pp. 408-30.
- HOLZMAN, F. D. Soviet foreign trade pricing and the question of discrimination: a "customs union" approach. *Rev. Econ. Stat.*, May 1962, pp. 134-47.
- JAIN, R. K. The growth of state control of the Indian economy. *Asian Stud.*, Feb. 1962, pp. 17-28.
- JASNY, N. The Soviet balance of national income and the American input-output analysis. *L'industria*, Jan.-Mar. 1962, pp. 51-57.
- KEMP, T. Structural factors in the retardation of French economic growth. *Kyklos*, 1962, 15 (2), pp. 325-52.

- KILBY, P. Organization and productivity in backward economies. *Quart. Jour. Econ.*, May 1962, pp. 303-10.
- KNALL, B., PIETTRE, A. AND OTHERS, Problèmes de l'Allemagne Occidentale. *Rev. Econ.*, May 1962, pp. 21-496.
- LAMBI, I. N. The protectionist interests of the German iron and steel industry, 1873-1879. *Jour. Econ. Hist.*, Mar. 1962, pp. 59-70.
- LANE, F. C. Units of economic growth historically considered. *Kyklos*, 1962 (1), pp. 95-106.
- LAUTERBACH, A. Managerial attitudes and economic development. *Kyklos*, 1962, 15 (2), 374-400.
- LICHTBLAU, G. E. The Communist labor offensive in former colonial countries. *Indus. Lab. Rel. Rev.*, Apr. 1962, pp. 376-401.
- LORENZ, D. Zur Typologie der Entwicklungsländer. *Jahrb. f. Sozialwissensch.*, 12 (3), pp. 354-80.
- LITTLE, I. M. D. A critical examination of India's third Five-Year plan. *Oxford Econ. Papers*, Feb. 1962, pp. 1-24.
- MAKDISI, S. Some aspects of Syrian economic growth, 1945-57. *Middle East Econ. Pap.*, 1961, pp. 45-63.
- MARK, S. M. Chinese economic growth under the five-year plans. *Malayan Econ. Rev.*, Apr. 1962, pp. 61-76.
- METCALF, T. R. Struggle over land tenure in India, 1860-1868. *Jour. Asian Stud.*, May 1962, pp. 295-308.
- MOZHINA, M. Changes in the distribution of USSR industrial workers according to wages. *Prob. Econ.*, Apr. 1962, pp. 21-25.
- NIKONOVA, I. Methodological problems in comparing the industrial production structures of the USSR and USA. *Prob. Econ.*, Mar. 1962, pp. 3-9.
- NOSÉ, N. National income concepts: reconsidered. *Kobe Econ. & Bus. Rev.*, 1962, pp. 85-94.
- OSHIMA, H. T. A strategy for Asian development. *Econ. Develop. and Cult. Change*, Apr. 1962, pp. 294-316.
- PAMPLIEGA, J. C. El sector público y la economía española (años 1954, 1955, 1956 y 1957). *Rev. Econ. Pol.*, Jan.-Apr. 1962, pp. 95-120.
- PETTENGILL, R. Population control to accelerate economic progress in the Middle East. *Middle East Econ. Pap.*, 1961, pp. 79-97.
- PORTER, R. C. The inflationary implications of crop failure. *Pakistan Develop. Rev.*, Spring 1962, pp. 23-46.
- RAJ, K. N. The marginal rate of saving in the Indian economy. *Oxford Econ. Papers*, Feb. 1962, pp. 36-50.
- RANIS, G. Investment criteria, productivity and economic development: an empirical comment. *Quart. Jour. Econ.*, May 1962, pp. 298-302.
- RANIS, G. AND FEI, J. C. H. Una teoría del desarrollo económico. *El Trimestre Econ.*, Apr.-June 1962, pp. 246-88.
- RICHARDS, C. S. Problems of economic development in the Republic of South Africa. *So. Afr. Jour. Econ.*, Mar. 1962, pp. 3-33.
- ROMERO, A. L. Un sistema de prioridades de inversión para la minería. *El Trimestre Econ.*, Apr.-June 1962, pp. 195-208.
- RULLIERE, G. La tributación agrícola y el desarrollo económico. *Rev. Econ. Latinoamericana*, Apr.-June 1961, pp. 75-108.
- SABARWAL, R. S. Internal and external sources of finance for the private sector in India. *Indian Jour. Econ.*, Apr. 1960, pp. 331-38.
- SAULNIER, R. J. Economist's eye-view of the world. *Fortune*, May 1962, pp. 126-27.
- SCHELSKY, H. Die Bedeutung des Klassenbegriffes für die Analyse unserer Gesellschaft. *Jahrb. f. Sozialwissensch.*, 12 (3), pp. 237-69.

- SCHMITT, H. O. Foreign capital and social conflict in Indonesia, 1950-1958. *Econ. Develop. and Cult. Change*, Apr. 1962, pp. 284-93.
- SRIVASTAVA, S. S. Extent of auto-financing in major Indian industries. *Indian Jour. Econ.*, Oct. 1960, pp. 183-90.
- STALLER, G. J. Czechoslovak industrial growth: 1948-1959. *Am. Econ. Rev.*, June 1962, pp. 385-407.
- SURÁNYI-UNGER, T. Arbeit und Produktivität in Südosteuropa. *Schmollers Jahrb.*, 82 (1), pp. 41-70.
- TANNENBAUM, F. Castro and social change. *Pol. Sci. Quart.*, June 1962, pp. 178-204.
- TERENT'EV, M. Problems of the further development and consolidation of the collective farm system. *Prob. Econ.*, Jan., 1962, pp. 24-30.
- TINBERGEN, J. Planning in stages. *Stat. Tids. Mar.* 1962, pp. 1-20.
- TINTNER, G. AND MURTEIRA, B. Un modelo "input-output" simplificado para a economia portuguesa. *Col. de Estudos*, 1959 (8), pp. 43-54.
- VAN EERDE, K. S. Problems and alignments in African labor. *Soc. Research*, Spring 1962, pp. 73-100.
- WESSON, R. G. The Soviet communes. *Soviet Stud.*, Apr. 1962, pp. 341-61.
- WILLIAMSON, J. G. The long swing: comparisons and interactions between British and American balance of payments, 1820-1913. *Jour. Econ. Hist.*, Mar. 1962, pp. 21-46.
- WONNACOTT, P. Disguised and overt unemployment in underdeveloped economies. *Quart. Jour. Econ.*, May 1962, pp. 279-97.
- Archaisme et modernisme dans l'Islam contemporain. *Cahiers Inst. Sci. Econ. Appliquée*, Dec. 1961.
- Conference of Asian Economic Planners (1st sess.). Economic development and planning in Asia and the Far East. *Econ. Bull. for Asia and the Far East*, Dec. 1961, pp. 1-82.

Statistical Methods; Econometrics; Social Accounting

- ANTON, H. R. Activity analysis of the firm: a theoretical approach to accounting (systems) development. *Liiketaloudellinen Aikakauskirja*, 1961 (4), pp. 290-305.
- BIRNBAUM, A. On the foundations of statistical inference. *Jour. Am. Stat. Assoc.*, June 1962, pp. 269-306.
- DAVID, P. A. The deflation of value added. *Rev. Econ. Stat.*, May 1962, pp. 148-55.
- DINERSTEIN, H. S. Soviet goals and military force, *Orbis*, winter 1962, pp. 425-36.
- FIERING, M. B. On the use of correlation to augment data. *Jour. Am. Stat. Assoc.*, Mar. 1962, pp. 20-32.
- FISHER, W. D. Estimation in the linear decision model. *Internat. Econ. Rev.*, Jan. 1962, pp. 1-29.
- GOLDBERGER, A. S. Best linear unbiased prediction in the generalized linear regression model. *Jour. Am. Stat. Assoc.*, June 1962, pp. 369-75.
- KINDAHL, J. K. Estimation of means and totals from finite populations of unknown size. *Jour. Am. Stat. Assoc.*, Mar. 1962, pp. 61-91.
- MATHEWS, R. L. The Australian flow-of-funds accounts. *Econ. Record*, Mar. 1962, pp. 94-107.
- PORTELA, A. G. *Cybernetica e comportamento económico*. *Col. de Estudos*, 1959 (8), pp. 55-88.

Economic Systems; Planning and Reform; Cooperation

- LUBOWICKI, J. La planification budgétaire dans le cadre de la planification économique en régime socialiste. With summary in English. *Pub. Fin./Fin. Publiques*, 1962, 17 (1), pp. 43-65.
- PORSHOLT, L. On the economic structure of socialism. *Øst Økon.*, Mar. 1962, pp. 21-35.

- SANTIAGO DE PABLO, L. El tránsito del socialismo al comunismo en la ideología soviética actual. *Rev. de Est. Pol.*, Jan.-Feb. 1962, pp. 23-82.
- SCHLESINGER, R. The CPSU programme: the conception of Communism. *Soviet Stud.*, Apr. 1962, pp. 383-406.
- SCHLESINGER, R. Marxist theory and the new program of the Soviet Communist Party. *Sci. and Soc.*, Spring 1962, pp. 129-52.
- WERALSKI, M. La pression fiscale dans les pays capitalistes et dans les pays socialistes. *Rev. Sci. Fin.*, Jan. 1962, pp. 24-40.

Business Fluctuations

- BASSIE, V. L. Critique of long-range forecasting. *Quart. Rev. Econ. Bus.*, Nov. 1961, pp. 41-54.
- KEMP, M. C. Economic forecasting when the subject of the forecast is influenced by the forecast. *Am. Econ. Rev.*, June 1962, pp. 492-96.
- MICONI, G. Short cycles in Italy (1860-1959). *Rev. Econ. Conditions in Italy*, Mar. 1962, pp. 87-100.
- MUNDELL, R. A. The appropriate use of monetary and fiscal policy for internal and external stability. *Internat. Mon. Fund Staff Papers*, Mar. 1962, pp. 70-79.
- Economic policy for 1962: A symposium. *Rev. Econ. Stat.*, Feb. 1962, pp. 1-23.

Money, Credit and Banking; Monetary Policy; Mortgage Credit

- ALHADEFF, D. A. A reconsideration of restrictions on bank entry. *Quart. Jour. Econ.*, May 1962, pp. 246-63.
- BISHWAS, D. The Indian money market: an analysis of money demand. *Indian Econ. Jour.*, Jan. 1962, pp. 308-23.
- BRIMMER, A. F. Foreign banking institutions in the United States money market. *Rev. Econ. Stat.*, Feb. 1962, pp. 76-81.
- BRIMMER, A. F. Price determination in the United States treasury bill market. *Rev. Econ. Stat.*, May 1962, pp. 178-83.
- CRAMP, A. B. Financial intermediaries and monetary policy. *Economica*, May 1962, pp. 143-51.
- ELLIS, H. S. Notes on the demand for money. *Kyklos*, 1962 (1), pp. 216-30.
- HORWICH, G. Real assets and the theory of interest. *Jour. Pol. Econ.*, Apr. 1962, pp. 157-69.
- JOHNSON, H. G. Monetary theory and policy. *Am. Econ. Rev.*, June 1962, pp. 335-84.
- LEVENSON, A. M. Interest rate and cost differentials in bank lending to small and large business. *Rev. Econ. Stat.*, May 1962, pp. 190-97.
- LUNDBERG, E. Economic stability and monetary policy. *Skandinav. Bank. Quart. Rev.*, 42 (1), pp. 9-18.
- MALKIEL, B. G. Expectations, bond prices, and the term structure of interest rates. *Quart. Jour. Econ.*, May 1962, pp. 197-218.
- MUTH, R. F. Interest rates, contract terms, and the allocation of mortgage funds. *Jour. Finance*, Mar. 1962, pp. 63-80.
- REIERSON, R. L. New forces in the money market. *Jour. Finance*, May 1962, pp. 220-29.
- ROOSA, R. V. Reconciling internal and external financial policies. *Jour. Finance*, Mar. 1962, pp. 1-16.
- ROZEN, M. Competition among financial institutions for demand and thrift deposits. *Jour. Finance*, May 1962, pp. 318-32.
- SCHLESINGER, J. R. The sequel to bills only. *Rev. Econ. Stat.*, May 1962, pp. 184-89.
- TARSHIS, L. Money and credit (review article). *Am. Econ. Rev.*, June 1962, pp. 472-80.
- TURVEY, R. The effect of price-level changes in real private wealth in the United Kingdom, 1954-60. *Economica*, May 1962, pp. 171-75.

- WHITE, W. H. The structure of the bond market and the cyclical variability of interest rates. *Internat. Mon. Fund Staff Papers*, Mar. 1962, pp. 107-47.
- ZUPNICK, E. Consumer credit and monetary policy in the United States and the United Kingdom. *Jour. Finance*, May 1962, pp. 342-54.
- Growth in institutional savings. *Fed. Res. Bull.*, May 1962, pp. 513-21.

Public Finance; Fiscal Policy

- BATOR, F. M. Money and government. *Atlantic*, Apr. 1962, pp. 110-18.
- BUCHANAN, J. M. Easy budgets and tight money. *Lloyds Bank Rev.*, Apr. 1962, pp. 17-30.
- COLM, G. Budgetary projections in the framework of economic projections and their adaptations. With résumé in French. *Pub.Fin./Fin. Publiques*, 1962, 17 (1), pp. 5-42.
- ECKSTEIN, O. Federal expenditure policy for economic growth. *Jour. Finance*, May 1962, pp. 280-88.
- GOFFMAN, I. J. The taxation of capital gains: an economic analysis. *Can. Jour. Econ. Pol. Sci.*, May 1962, pp. 235-44.
- HANSEN, R. R. An empirical analysis of the retail sales tax with policy recommendations. *Nat. Tax Jour.*, Mar. 1962, pp. 1-13.
- HICKS, U. K. Plowden, planning and management in the public services. *Pub. Admin.*, Winter 1961, pp. 299-312.
- HITCH, C. J. Management of the defense dollar. *Fed. Accountant*, June 1962, pp. 33-44.
- JONES, A. R. The financing of TVA. *Law and Contemp. Prob.*, Autumn 1961, pp. 725-40.
- LUNDBERG, E. Economic stability and monetary policy. *Skandinav. Bank. Quart. Rev.*, 43 (1), pp. 9-18.
- MILLER, W. L. The magnitude of the discount rate for government projects. *So. Econ. Jour.*, Apr. 1962, pp. 348-56.
- PEARSE, P. H. Automatic stabilization and the British taxes on income. *Rev. Econ. Stud.*, Feb. 1962, pp. 124-39.
- POOLE, K. E. The role of federal fiscal policy in the 1957-60 business cycle. *Jour. Finance*, Mar. 1962, pp. 17-37.
- REHN, G. The national budget and economic policy. *Skandinav. Bank. Quart. Rev.*, 1962 43 (2), pp. 39-47.
- ROBSON, P. Patterns of federal finance in the newer federations. *Finanzarchiv*, Apr. 1962, pp. 415-28.
- SCHLESINGER, J. R. Emerging attitudes toward fiscal policy. *Pol. Sci. Quart.*, Mar. 1962, pp. 1-18.
- TAIT, A. A. The taxation of wealth at death: a new proposal. *Scot. Jour. Pol. Econ.*, Feb. 1962, pp. 38-45.
- TURE, N. B. Growth aspects of federal tax policy. *Jour. Finance*, May 1962, pp. 269-79.
- VARTIAINEN, H. J. Valtionalouden vaikutuksista tulonmuodostukseen (on the rôle of public finance in income determination). *Kansantaloudellinen Aikakauskirja*, 1961 (4), pp. 272-87.

International Economics

- ALLEN, W. R. Domestic investment, the foreign trade balance and the World Bank. *Kyklos*, 1962, 15 (2), pp. 353-73.
- BAER, W. AND HERVÉ, M. E. A. Multiple exchange rates and the attainment of multiple policy objectives. *Economica*, May 1962, pp. 176-84.
- BARKIN, S. Labor's position on tariff reduction. *Indus. Rel.*, May 1962, pp. 49-64.
- BHAGWATI, J. Indian balance of payments policy and exchange auctions. *Oxford Econ. Papers*, Feb. 1962, pp. 51-68.
- BROWN, M. AND JONES, R. Economic growth and the theory of international income flows. *Econometrica*, Jan. 1962, pp. 88-97.

- CAIOLA, M. Balance of payments of the U.S.S.R., 1955-58. *Internat. Mon. Fund Staff Papers*, Mar. 1962, pp. 1-36.
- CHENG, H. S. Relative movements in the prices of exports of manufactures: United States versus other industrial countries, 1953-59. *Internat. Mon. Fund Staff Papers*, Mar. 1962, pp. 80-106.
- COTTA, A. Essai d'analyse des effets de l'investissement interne sur la balance commerciale. *Cahiers l'Inst. Sci. Écon. Appliquée*, Dec. 1961, pp. 1-18.
- DIBBOLD, W. Britain, the Six and the world economy. *For. Affairs*, Apr. 1962, pp. 407-18.
- DEL PUNTA, V. Un tentativo di dinamizzazione della teoria pura del commercio internazionale. *Riv. di Pol. Econ.*, Jan. 1962, pp. 3-42.
- DENIZET, J. New ideas in the theory of money demand. *Écon. Appliquée*, 1961, 14 (4), pp. 501-48.
- ERHARD, L. Probleme der europäischen und atlantischen Integration. *Aussenwirtschaft*, Mar. 1962, pp. 31-45.
- FISHER, F. M. A proposal for the distribution abroad of the United States' food surplus. *Rev. Econ. Stat.*, Feb. 1962, pp. 52-57.
- HALLSTEIN, W. Wirtschaftliche Ergebnisse der europäischen Integration. *Kyklos*, 1962 (1), pp. 107-21.
- HAY, P. The European Common Market and the most-favored-nation clause. *Univ. Pittsburgh Law Rev.*, Mar. 1962, pp. 661-84.
- JACKSON, B. W. Free Africa and the Common Market. *For. Affairs*, Apr. 1962, pp. 419-30.
- JAMES, E. AND LECOQ, J. The monetary theory of Léon Walras. *Écon. Appliquée*, 1961, 14 (4), pp. 603-31.
- JOHNSON, H. G. International liquidity—problems and plans. *Malayan Econ. Rev.*, Apr. 1962, pp. 1-19.
- KAWATA, F. A study on Japan's invisible trade. *Kobe Econ. & Bus. Rev.*, 1962, pp. 43-60.
- KEMP, M. C. Foreign investment and the national advantage. *Econ. Record*, Mar. 1962, pp. 56-62.
- KHATKHATE, D. R. Some notes on the real effects of foreign surplus disposal in under-developed economies. *Quart. Jour. Econ.*, May 1962, pp. 186-96.
- KRAVIS, I. B. Common Market—lesson in trade expansion. *Harvard Bus. Rev.*, Mar.-Apr. 1962, pp. 6-8.
- KROMPHARDT, J. Produktivitätsentwicklung und Zahlungsbilanzausgleich wachsender Volkswirtschaften. *Jahrb. f. Nationalök. und Stat.*, Mar. 1962, pp. 89-105.
- LOVASY, G. Inflation and exports in primary producing countries. *Internat. Mon. Fund Staff Papers*, Mar. 1962, pp. 37-69.
- MARTINEZ LE CLAINCHE, R. El comercio exterior de México con Europa. *Invest. Econ.*, 21 (84), pp. 789-812.
- MEAD, W. J. Some political-economic issues determining U.S. tariff policy. *Am. Jour. Econ. Soc.*, Apr. 1962, pp. 131-44.
- MIKESELL, R. F. Il movimento verso raggruppamenti commerciali regionali nell'America latina. *Mondo Aperto*, Feb. 1962, pp. 1-21.
- MIKESELL, R. F. AND KLEINSORGE, P. L. Foreign trade and U.S. labor costs. *Indus. Rel.*, May 1962, pp. 1-30.
- MINHAS, B. S. The homohypallagic production function, factor-intensity reversals, and the Heckscher-Ohlin theorem. *Jour. Pol. Econ.*, Apr. 1962, pp. 138-56.
- MOULIN, G. Intégrer. *Annales de Sci. Écon. Appliquées* (Louvain), Dec. 1961, pp. 485-502.
- NETRUSOV, A. Development of economic relations between countries with different social systems. *Prob. Econ.*, Feb. 1962, pp. 54-61.
- PHILIPS, L. Common markets: towards a theory of market integration. *Jour. Indus. Econ.*, Mar. 1962, pp. 81-92.

- REUTERSKIÖLD, B. EEC membership or isolation? *Skandinav. Bank. Quart. Rev.*, 42 (1), pp. 19-27.
- SCHMIDT, E. P. Wages, prices and changing world markets. *Indus. Rel.*, May 1962, pp. 31-48.
- SCHWEITZER, A. Foreign exchange crisis of 1936. *Zeitschr. f. die ges. Staatswiss.*, 118 (2), pp. 243-77.
- STEWART, I. G. Customs union in East and Central Africa. *Scot. Jour. Pol. Econ.*, Feb. 1962, pp. 65-72.
- VAN MEERHAEGHE, M. Contributions récentes aux théories relatives à la balance des paiements. *Riv. Internaz. di Sci. Econ. e Com.*, Feb. 1962, pp. 101-21.
- VINER, J. Relative abundance of the factors and international trade. *Indian Econ. Jour.*, Jan. 1962, pp. 274-88.
- Developments in commercial policy. A semi-annual survey. GATT, Jan.-June 1961.

Business Finance; Investment and Security Markets; Insurance

- DRUMMOND, I. M. Canadian life insurance companies and the capital market, 1890-1914. *Can. Jour. Econ. Pol. Sci.*, May 1962, pp. 204-24.
- GORDON, M. J. The savings investment and valuation of a corporation. *Rev. Econ. Stat.*, Feb. 1962, pp. 37-51.

Business Organization; Managerial Economics; Marketing; Accounting

- BEDFORD, N. M., GRIFFIN, C. H. AND WILLIAMS, T. H. Emerging role of mathematical methodology in accountancy. *N.A.A. Bull.*, June 1962, pp. 33-38.
- DOUGLAS, E. Size of firm and the structure of costs in retailing. *Jour. Bus. Univ. Chicago*, Apr. 1962, pp. 158-90.
- GORT, M. Systematic errors in budgeting capital outlays. *Rev. Econ. Stat.*, Feb. 1962, pp. 72-75.
- ONO, J. On the purposes of a going-concern valuation and its natures. *Kobe Econ. & Bus. Rev.*, 1962, pp. 105-16.
- WEINWURM, E. H. Economic models and operations research models. *Management Int.*, July-Aug. 1961, pp. 5-14.

Industrial Organization; Government and Business; Industry Studies

- CORLEY, T. A. B. How do business men plan production? A case study of the radio and television industry 1951-1960. *Jour. Indus. Econ.*, Mar. 1962, pp. 139-54.
- EITEMAN, D. K. Interdependence of utility rate-base type, permitted rate of return, and utility earnings. *Jour. Finance*, Mar. 1962, pp. 38-52.
- GALBRAITH, J. K. Public administration and the public corporation. *Indian Jour. Pub. Admin.*, Oct.-Dec. 1961, pp. 438-46.
- HART, P. E. The business propensity to save and size of firm. *Rev. Econ. Stud.*, Feb. 1962, pp. 147-50.
- HYMER, S. AND PASHIGIAN, P. Turnover of firms as a measure of market behavior. *Rev. Econ. Stat.*, Feb. 1962, pp. 82-87.
- KOMIYA, R. Technological progress and the production function in the United States steam power industry. *Rev. Econ. Stat.*, May 1962, pp. 156-66.
- LOEVINGER, L. The corporation as a power nexus. *Antitrust Bull.*, July-Dec. 1961, pp. 345-60.
- MASERITZ, G. B. The relevant market—a case study of the duPont-General Motors decision. *Antitrust Bull.*, July-Dec. 1961, pp. 487-540.
- MUNBY, D. L. Economic problems of British railways. *Bull. Oxford Univ. Inst. Stat.*, Feb. 1962, pp. 1-30.
- SANDS, S. S. Concentration in United States manufacturing industry, 1904-1947. *Internat. Econ. Rev.*, Jan. 1962, pp. 79-93.

NOTES

Honorary Members

At the meeting of the Executive Committee, March 23-24, 1962, the following distinguished economists were elected honorary members of the American Economic Association:

Dr. Raul Prebisch, Argentina
Professor Eugenio Gudín, Brazil
Professor Erich Schneider, Germany
Professor James E. Meade, England
Professor G. Ugo Papi, Italy
Professor Erik Lundberg, Sweden
Professor François Perroux, France

Journal of Economic Abstracts

The American Economic Association, with the cooperation of about thirty other economic journals (including the leading journals of a considerable number of foreign countries), is undertaking the publication of a quarterly *Journal of Economic Abstracts*. Each issue will provide abstracts in English of the articles, including review articles, contained in the current issue of each of the participating periodicals. The editor of the journal will be Arthur Smithies, of Harvard University. The first issue, which is to appear in December 1962, will be widely circulated without charge to the subscribers of the cooperating journals, including the members of the American Economic Association, the Econometric Society, and other cooperating associations. The subscription price for subsequent issues will be \$2.00 per year.

SEVENTY-FIFTH ANNUAL MEETING OF THE AMERICAN ECONOMIC ASSOCIATION

Penn-Sheraton Hotel, Pittsburgh, Pa.—December 27-29, 1962

Preliminary Announcement of the Program

Wednesday, December 26, 1962

6:00 P.M. EXECUTIVE COMMITTEE DINNER MEETING

Thursday, December 27, 1962

9:30 A.M. PRINCIPLES OF ECONOMIC POLICY, CONSISTENT AND INCONSISTENT, I. PUBLIC
POLICIES WITH RESPECT TO PRIVATE BUSINESS

Chairman: R. B. HEFLEBOWER, Northwestern University

Papers: Policy with Respect to Unregulated Industries

EWALD T. GREYER, University of California, Berkeley
Ambivalence in Public Policy Toward Regulated Industries
BEN W. LEWIS, Oberlin College

Discussants: ROBERT F. LANZILLOTTI, Michigan State University

JESSE W. MARKHAM, Princeton University

HENRY M. TREBING, Indiana University

HARVEY J. LEVIN, Hofstra College

TOPICS IN ECONOMIC THEORY (Joint Session with Econometric Society)

Chairman: OSKAR MORGENSTERN, Princeton University

THE AMERICAN ECONOMIC REVIEW

Papers: Theory and Institutions in the Study of Investment Behavior

EDWIN KUH, Massachusetts Institute of Technology

Investment: Fact and Fancy

ROBERT EISNER, Northwestern University

Capital Theory and Investment Behavior

DALE JORGENSEN, University of California, Berkeley

Discussants: CARL CHRIST, Johns Hopkins University

EDWIN MANSFIELD, Yale University

ECONOMIC DEVELOPMENT AND THE POPULATION PROBLEM

Chairman: STEPHEN ENKE, Duke University

Papers: Population Problems and European Economic Development in the Late 18th and Early 19th Centuries

JOHN HABAKKUK, Oxford University

Allocation Criteria and Population Growth

GUSTAV RANIS, Yale University

Discussants: WILLIAM PARKER, Yale University

PAUL DEMENY, Princeton University

DOUGLASS NORTH, University of Washington

MARK PERLMAN, Johns Hopkins University

2:30 P.M. PRINCIPLES OF ECONOMIC POLICY, CONSISTENT AND INCONSISTENT, II: ECONOMICS OF OUR PRESENT FARM PRICE SUPPORT POLICY (Joint Session with American Farm Economic Association)

Chairman: THEODORE W. SCHULTZ, University of Chicago

Papers: Welfare and Efficiency Implications of United States Agricultural Policy

D. GALE JOHNSON, University of Chicago

The Rationality of United States Agricultural Policies

WALTER W. WILCOX, Library of Congress

Discussants: HENDRIK S. HOUTHAKKER, Harvard University

GEORGE S. TOLLEY, North Carolina State College

JOHN A. SCHNITTKER, U.S. Department of Agriculture

INDUSTRIAL CAPACITY

Chairman: DANIEL CREAMER, National Industrial Conference Board

Papers: An Appraisal of Measures of Capacity

ALMARIN PHILLIPS, University of Virginia

Uses of Capacity Measures for Short-Run Economic Analysis

CHARLES L. SCHULTZE, Bureau of the Budget

Discussants: SOLOMON FABRICANT, New York University and National Bureau of Economic Research

DAVID LUSHER, Council of Economic Advisers

MORRIS COHEN, St. Johns University

ECONOMIC EDUCATION

Chairman: ARTHUR F. BURNS, National Bureau of Economic Research

Papers: Economic Literacy: What Role for Television?

JOHN R. COLEMAN, Carnegie Institute of Technology

The Task Force Report: A Critique

GEORGE J. STIGLER, University of Chicago

Task Force to Classroom

LEWIS E. WAGNER, University of Illinois

Discussants: FLOYD A. BOND, University of Michigan

CAMPBELL McCONNELL, University of Nebraska

8:00 P.M. PRESIDENTIAL ADDRESS

Chairman: JOHN ISE, University of Kansas*Presidential Address:* EDWARD S. MASON, Harvard University*Friday, December 28, 1962*

9:30 A.M. PRINCIPLES OF ECONOMIC POLICY, CONSISTENT AND INCONSISTENT, III: INTERNATIONAL COMMODITY STABILIZATION

Chairman: HERBERT STEIN, Committee for Economic Development*Papers:* Problems of International Commodity Stabilization

BORIS C. SWERLING, Board of Governors, Federal Reserve System

International Commodity Stabilization Schemes and the Export Problems of Developing Countries

RAYMOND F. MIKESELL, University of Oregon

Export Instability: The Latin American Case

DAVID H. POLLOCK AND NICASIO PERDOMI, Economic Commission for Latin America

Discussants: CHARLES P. KINDLEBERGER, Massachusetts Institute of Technology

GERTRUD LOVASY, International Monetary Fund

ROBERT Z. ALIBER, Committee for Economic Development

TAX REFORM

Chairman: WILLIAM J. FELLNER, Yale University*Papers:* The Bearing of the Problem on Capital Formation and the Use of Capital

DAN T. SMITH, Harvard University

Growth with Equity

RICHARD MUSGRAVE, Princeton University

Depreciation Problems

NORMAN TURE, National Bureau of Economic Research

Discussants: JOHN DUE, University of Illinois

EARL ROLPH, University of California, Berkeley

CHALLIS A. HALL, JR., Yale University

PROBLEMS OF REGIONAL INTEGRATION

Chairman: IRVING B. KRAVIS, University of Pennsylvania*Papers:* European Integration: Problems and Issues

BELA BALASSA, Yale University

Economic Integration and the Pattern of World Trade

ERIK THORBECKE, Iowa State University

European Economic Integration and the United States

LAWRENCE B. KRAUSE, The Brookings Institution

Discussants: RANDALL HINSEAW, Claremont College

PRICING AND RESOURCE ALLOCATION IN TRANSPORTATION AND PUBLIC UTILITIES

Chairman: MARTIN L. LINDAHL, Dartmouth College*Papers:* Pricing in Urban and Interurban Transport

WILLIAM S. VICKREY, Columbia University

The Influence of Transport Pricing and Regulation on Regional Location of Industry

LEON N. MOSES, Northwestern University

Practical Applications of Marginal Cost Pricing in the Public Utility Field

JAMES R. NELSON, Amherst College

Discussants: ELI W. CLEMENS, University of Maryland
 JULIAN S. DUNCAN, University of New Mexico
 ROY J. SAMPSON, University of Oregon

12:30 P.M. JOINT LUNCHEON WITH AMERICAN FINANCE ASSOCIATION

Chairman: EDWARD S. MASON, President, American Economic Association
Speaker: WILLIAM MCC. MARTIN, JR., Board of Governors, Federal Reserve System

2:30 P.M. ECONOMIC AND MARKETING ASPECTS OF THE NEW TRADE POLICY (Joint Session with American Marketing Association)

Chairman: WILLARD L. THORP, Amherst College

Papers: The New Trade Policy in Perspective

RAYMOND VERNON, Harvard University

Marketing Responses to the New Trade Policy

RONALD L. KRAMER, University of Pennsylvania

Discussants: JACK N. BEHRMAN, U.S. Department of Commerce

DON D. HUMPHREY, The Fletcher School of Law and Diplomacy

FRANK MEISSNER, School of World Business

HALE A. NEWCOMER, JR., Kent State University

FINANCIAL INSTITUTIONS AND MONETARY POLICY: A RE-EXAMINATION OF THEIR INTERRELATIONSHIP

Chairman: WARREN L. SMITH, University of Michigan

Papers: Financial Intermediaries and the Goals of Monetary Policy

JOSEPH ASCHHEIM, The Johns Hopkins University

The Place of Financial Intermediaries in the Transmission of Monetary Policy

KARL BRUNNER, University of California, Los Angeles

Financial Intermediaries and the Effectiveness of Monetary Control

JAMES TOBIN, Yale University

WILLIAM BRAINARD, Yale University

Discussants: JAMES S. DUESENBERY, Harvard University

ABBA P. LERNER, Michigan State University

ARTHUR BENAVIDES, Princeton University

PRINCIPLES OF ECONOMIC POLICY, CONSISTENT AND INCONSISTENT, IV: PUBLIC POLICY TOWARDS THE LABOR MARKET

Chairman: GEORGE H. HILDEBRAND, Cornell University

Papers: Should Current Federal Labor Legislation be Drastically Reformed?

SIMON ROTTENBERG, University of Buffalo

Next Steps in Wage-Price Policy

FRANK C. PIERSON, Swarthmore College

Discussants: WALTER FROELICH, Marquette University

WILLIAM H. PETERSON, New York University

JOHN T. DUNLOP, Harvard University

8:00 P.M. RICHARD T. ELY LECTURE

Chairman: PAUL A. SAMUELSON, Massachusetts Institute of Technology

Paper: The Economist in History

JACOB VINER, Princeton University

Discussants: GEORGE J. STIGLER, University of Chicago

ALEXANDER GERSCHENKRON, Harvard University

Saturday, December 29, 1962

9:30 A.M. POSTWAR GROWTH IN THE UNITED STATES IN THE LIGHT OF THE LONG-SWING HYPOTHESIS

Chairman: RICHARD A. EASTERLIN, University of Pennsylvania

Papers: The Postwar Retardation: Another Long Swing in the Rate of Growth?

BERT G. HICKMAN, The Brookings Institution

Long Swings in Residential Construction: The Post-War Experience

BURNHAM O. CAMPBELL, University of California, Los Angeles
Dollar Scarcity and Surplus in Historical Perspective

JEFFREY G. WILLIAMSON, Vanderbilt University

Discussants: EDWARD F. DENISON, The Brookings Institution

RENDIGS FELS, Vanderbilt University

R. A. GORDON, University of California, Berkeley

ILSE MINTZ, Columbia University and National Bureau of Economic Research

ECONOMIC TRENDS AND PROSPECTS IN THE U.S.S.R. AND EASTERN EUROPE

Chairman: ABRAM BERGSON, Harvard University

Papers: Prospects for Economic Growth in the U.S.S.R.

ALEC NOVE, London School of Economics and Political Science

Rate of Economic Growth in Yugoslavia

JAROSLAV VANEK, Harvard University

Problems of Industrialization in Rumania

J. M. MONTIAS, Yale University

Discussants: WARREN NUTTER, University of Virginia

DRAGOSLAV AVRAMOVIC, International Bank for Reconstruction and Development

NICOLAS SPULBER, Indiana University

JAPANESE ECONOMIC DEVELOPMENT

Chairman: WILLIAM W. LOCKWOOD, Princeton University

Papers: Recent Japanese Growth in Historical Perspective

HENRY ROZOVSKY, University of California, Berkeley, and

KAZUSHI OHKAWA, Hitotsubashi University

The Place of Japan in the Network of World Trade

PHILIP H. TREZISE, Department of State

Discussants: MARTIN BRONFENBRENNER, Carnegie Institute of Technology

WARREN S. HUNSBERGER, The Johns Hopkins University

ECONOMIC RESEARCH BY INTERNATIONAL AGENCIES: A PROGRESS REPORT

Participants to be announced.

2:30 P.M. CONDITIONS OF INTERNATIONAL MONETARY EQUILIBRIUM

Chairman: JAMES W. ANGELL, Columbia University

Papers: Equilibrium Under Fixed Exchanges

HARRY G. JOHNSON, University of Chicago

Fluctuating Exchange Rates

RICHARD E. CAVES, University of California, Berkeley

International Liquidity, the Next Steps

PETER B. KENEN, Columbia University

Discussants: J. MARCUS FLEMING, International Monetary Fund

HARRY C. EASTMAN, University of Toronto

J. HERBERT FURTH, Federal Reserve Board

DEFENSE AND DISARMAMENT

Chairman: T. C. SCHELLING, Harvard University

Papers: Economic Analysis in the Department of Defense

CHARLES J. HITCH AND ALAIN ENTHOVEN, U.S. Department of Defense

The Economics of Threat Systems

KENNETH E. BOULDING, University of Michigan

The Impact of Disarmament on Research and Development—A

Case Study of Economic Dynamics

RICHARD NELSON, Council of Economic Advisers

Discussants: RICHARD U. SHERMAN, JR., Ohio State University

HAROLD G. BARNETT, Wayne State University

PROBLEMS OF METHODOLOGY

Chairman: FRITZ MACHLUP, Princeton University*Papers:* Explanation, Prediction, Values, and Policy in Economics

ANDREAS G. PAPANDREOU, University of California, Berkeley

Assumptions in Economic Theory

ERNEST NAGEL, Columbia University

Analytic Economics and the Logic of External Economics

SHERMAN KRUPP, Lehigh University

Discussants: G. CHRISTOPHER ARCHIBALD, London School of Economics

TJALLING C. KOOPMANS, Yale University

HERBERT A. SIMON, Carnegie Institute of Technology

5:00 P.M. BUSINESS MEETING

6:00 P.M. EXECUTIVE COMMITTEE DINNER MEETING

COLLEGE OF THE AIR'S "THE AMERICAN ECONOMY"

Beginning in late September, 1962, the American Economic Association joins with Learning Resources Institute, the Joint Council on Economic Education, and the National Task Force on Economic Education in sponsoring a college-credit course to be taught over a national television network. This course, which is but one major event in a program to increase economic literacy in the United States, is aimed in particular at high school teachers of social and business studies. But it is hoped that a wide audience of adults, college students, and perhaps advanced high school students will be attracted to watch the series regularly.

Members of the American Economic Association may have both a general interest in the content and execution of the course and a particular interest in viewing selected lessons taught by members of the profession. Key details and the outline of the course are as follows:

There will be 160 half-hour lessons. Four in each five will be devoted to economic content; the fifth lesson in each of the 32 weeks of the course will be on methods of introducing the economic content into the high school curriculum.

The course will be carried by most affiliates of the CBS Television network across the nation. Many of these affiliates will carry it at an early morning hour on each of the five weekdays in the weeks from September 24, 1962 through May 24, 1963. In communities where there are educational television stations, the course may be carried a second time each day at a later afternoon hour.

John R. Coleman, head of the department of economics at Carnegie Institute of Technology, is responsible for over-all content and for teaching more than half of the lessons and for coordinating the guest lectures. His associate for teacher education, who will conduct the 32 methods lessons for high school teachers is John H. Haefner of the State University of Iowa; and the associate for content planning is Kenneth O. Alexander of Michigan College of Mining and Technology.

Principal advisors to Coleman are the members of the National Task Force on Economic Education: G. L. Bach, of Carnegie Institute of Technology, chairman; Arno A. Bellack, Teachers College, Columbia University; Lester V. Chandler, Princeton University;

M. L. Frankel, Joint Council on Economic Education; Robert A. Gordon, University of California at Berkeley; Ben W. Lewis, Oberlin College; Paul A. Samuelson, Massachusetts Institute of Technology; Floyd A. Bond, University of Michigan.

Three hundred or more colleges and school systems across the country will give credit for the course, either in economics or in education. Each college sets its own rules for credit and administers its own examinations. Most will require that students seeking credit come to the campus at regular intervals for supplementary work. Regular assignments will be made throughout the course from a choice of four leading textbooks.

More detailed information on the course, the books, and the credit arrangements is available through Economic Education, P.O. Box 1601, Grand Central Station, New York 17, New York.

There follows an outline of the course which will be presented as College of the Air, "The American Economy."

CBS Viewing

Date* 1962-1963	Lesson No.	Subject of Lesson
I. Introduction		
Sept. 24	1	The World of Economics Guests: John F. Kennedy, President of the United States Dwight D. Eisenhower, Former President of the United States
Sept. 25	2	A Look at the American Record
Sept. 26	3	The Questions Economists Ask
Sept. 27	4	The Worlds of "What Is" and "What Ought to Be"
Sept. 28	(5)	Methods)
Oct. 1	6	Of Facts, Fictions and Fallacies
II. The Rise and Reign of Markets		
Oct. 2	7	Introducing the Price System
Oct. 3	8	The Market Society and How It Grew (Part I) Guest: Robert Heilbroner
Oct. 4	9	The Market Society and How It Grew (Part II) Guest: Robert Heilbroner
Oct. 5	(10)	Methods)
III. America's Resources to Meet America's Needs		
Oct. 8	11	The Natural Resources: Will There Be Enough? Guest: Joseph L. Fisher, President, Resources For the Future, Inc.
Oct. 9	12	Water, Water Everywhere—But Not Quite
Oct. 10	13	People: The Quantity
Oct. 11	14	People: The Quality
Oct. 12	(15)	Methods)
Oct. 15	16	The Stock of Capital Guest: Solomon Fabricant, National Bureau of Economic Research
Oct. 16	17	Environment for Enterprise Guest: To be announced
Oct. 17	18	Mobilizers of Men, Money and Machines
IV. The Nation's Output		
Oct. 18	19	Gross National Product and Its Cousins (Part I)
Oct. 19	(20)	Methods)

* These will be the dates in those communities where the series begins on schedule on September 24. Some communities will run one day later; others may be a full week later. Interested viewers should check in their own communities to ascertain the date on which any particular lesson is to be shown.

CBS Viewing

Date* 1962-1963	Lesson No.	Subject of Lesson
Oct. 22	21	Gross National Product and Its Cousins (Part II)
Oct. 23	22	Introducing an Index: The Price Level Guest: Ewan Clague, Bureau of Labor Statistics
Oct. 24	23	When Output Was Low: The 1930's
Oct. 25	24	When Prices Were High: The 1950's
Oct. 26	(25)	Methods)
V. Of Money and Banks		
Oct. 29	26	What Money Is and Is Not
Oct. 30	27	The Business of Banks
Oct. 31	28	How Money Expands and Contracts
Nov. 1	29	Banks for Bankers: The Federal Reserve System
Nov. 2	(30)	Methods)
Nov. 5	31	Money and the "Fed" (Part I)
Nov. 6	32	Money and the "Fed" (Part II) Guest: C. Canby Balderston, Federal Reserve Board
Nov. 7	(33)	Review Session)
VI. Income, Jobs, and Prices		
Nov. 8	34	The Level of Business Activity: Knowns and Unknowns (Part I)
Nov. 9	(35)	Methods)
Nov. 12	36	The Level of Business Activity: Knowns and Unknowns (Part II)
Nov. 13	37	Building an Income and Employment Model (Part I)
Nov. 14	38	Building an Income and Employment Model (Part II)
Nov. 15	39	Adding Money to the Model
Nov. 16	(40)	Methods)
Nov. 19	41	How Important is Money? Guest: Milton Friedman, University of Chicago
Nov. 20	42	Economics, Politics, and the Money Supply
Nov. 21	43	Guest: G. L. Bach, Carnegie Institute of Technology
Nov. 26	44	The Tools of Fiscal Policy What can Fiscal Policy Do? (Part I) Guest: W. Allen Wallis, University of Chicago
Nov. 27	(45)	Methods)
Nov. 28	46	What Can Fiscal Policy Do? (Part II) Guest: Walter W. Heller, Council of Economic Advisers
Nov. 29	47	The Matter of the Debt
Nov. 30	48	Can We Have Full Employment Without Inflation? Guests: Milton Friedman, University of Chicago Paul A. Samuelson, Massachusetts Institute of Technology
Dec. 3	(49)	Review Session)
Dec. 4	(50)	Methods)
VII. The Business Firm in America		
Dec. 5	51	The Business of America
Dec. 6	52	The Rise of the Corporation Guest: Douglass C. North, University of Washington
Dec. 7	53	The Modern Corporation (Part I) Guests: J. Irwin Miller, Cummins Engine Company Second guest to be announced.
Dec. 10	54	The Modern Corporation (Part II)
Dec. 11	(55)	Methods)
Dec. 12	56	Keeping Account of Businesses (Part I)

CBS Viewing Date* 1962-1963	Lesson No.	Subject of Lesson
Dec. 13	57	Keeping Account of Businesses (Part II)
Dec. 14	58	Keeping Account of Businesses (Part III)
		VIII. Understanding a Market Economy
Dec. 17	59	An Overview of the American Economy
Dec. 18	(60	Methods)
Dec. 19	61	The Consumers' Side: Demand (Part I)
Dec. 20	62	The Consumers' Side: Demand (Part II)
Jan. 2	63	The Producers' Side: Supply (Part I)
Jan. 3	64	The Producers' Side: Supply (Part II)
Jan. 4	(65	Methods)
Jan. 7	66	. . . And Then Come Market Prices
Jan. 8	67	Putting the Market Tools to Work
Jan. 9	68	When Prices Were Controlled Guest: Ben W. Lewis, Oberlin College
Jan. 10	69	Equilibrium in the Competitive Society
Jan. 11	(70	Methods)
Jan. 14	71	A Case Study in Competition: Agriculture (Part I)
Jan. 15	72	A Case Study in Competition: Agriculture (Part II) Guests: Charles Shuman, American Farm Bureau Charles Brannan, National Farmers Union
Jan. 16	73	A Case Study in Competition: Agriculture (Part III) Guest: D. Gale Johnson, University of Chicago
Jan. 17	74	A Special Case: The Stock Market
Jan. 18	(75	Methods)
		IX. Competition, Monopoly, and Points in Between
Jan. 21	76	The Case of Many Firms But Different Products
Jan. 22	77	The Case of Few Firms (Part I)
Jan. 23	78	The Case of Few Firms (Part II)
Jan. 24	79	The Case of One Firm
Jan. 25	(80	Methods)
End of first semester		
Jan. 28	81	Backdrop for Public Policy Guest: Douglass C. North, University of Washington
Jan. 29	82	Policy Problems: Is "Fair Trade" Fair?
Jan. 30	83	Policy Problems: Which Way for the Railroads?
Jan. 31	84	Policy Problems: What About Collusion?
Feb. 1	(85	Methods)
Feb. 4	86	Policy Problems: Is Big Business Too Big? Guests: Martin Gainsbrugh, National Industrial Conference Board Clair Wilcox, Swarthmore College
Feb. 5	87	The Next Directions for Public Policy Guests: Leland Hazard, Carnegie Institute of Technology Edward S. Mason, Harvard University
Feb. 6	(88	Review Session)
		X. How Income is Distributed
Feb. 7	89	Introducing Factor Markets
Feb. 8	(90	Methods)
Feb. 11	91	Wages: A First Look
Feb. 12	92	Wages: A Closer Look
Feb. 13	93	Wages and Productivity Guest: George P. Shultz, University of Chicago

CBS Viewing

Date* 1962-1963	Lesson No.	Subject of Lesson
Feb. 14	94	Returns on Property: Interest and Rent
Feb. 15	(95	Methods)
Feb. 18	96	Spotlight on Profits
Feb. 19	97	Patterns in Income Distribution
Feb. 20	98	Today's Poor
Feb. 21	99	Private Approaches to Security
Feb. 25	(100	Methods)
Feb. 26	101	Public Approaches to Security
XI. Labor and Labor Organizations		
Feb. 27	102	Labor Force in Flux
Feb. 28	103	The Roots of Labor Unions
Mar. 1	104	Union or Non-Union?
Mar. 4	(105	Methods)
Mar. 5	106	Within the Halls of Labor
Mar. 6	107	The Goals of Unions Guests: John H. Lyons, Jr., International Association of Bridge, Structural and Ornamental Iron Workers (AFL-CIO) Walter Reuther, United Automobile Workers (AFL-CIO)
Mar. 7	108	The Collective Bargaining Table
Mar. 8	109	Policy Problems: What About Strikes? Guest: George W. Taylor, University of Pennsylvania
Mar. 11	(110	Methods)
Mar. 12	111	Policy Problems: Do Unions Breed Inflation? Guests: Marriner Eccles, Utah Construction and Mining Company Stanley H. Ruttenberg, American Federation of Labor and Congress of Industrial Organizations
Mar. 13	112	Policy Problems: Are Big Unions Too Big? Guests: Richard A. Lester, Princeton University David McCord Wright, McGill University
Mar. 14	(113	Review Session)
XII. Government Taxing and Spending		
Mar. 15	114	The Federal Budget: The Outflow
Mar. 18	(115	Methods)
Mar. 19	116	The Federal Budget: The Inflow
Mar. 20	117	Back of the Budget Guest: David E. Bell, Bureau of the Budget
Mar. 21	118	The State of the States
Mar. 22	119	The Situation Down at City Hall
Mar. 25	(120	Methods)
Mar. 26	121	The Impact of Taxation Guest: Joseph Pechman, Brookings Institution
Mar. 27	122	The Private-Public Mix Guests: Otto Eckstein, Harvard University Henry C. Wallich, Yale University
XIII. Case Studies in America's Unfinished Business		
Mar. 28	123	The Depressed Areas
Mar. 29	124	Lag and Spurt in the South Guest: William Nicholls, Vanderbilt University
Apr. 1	(125	Methods)
Apr. 2	126	The Plight of the Metropolitan Areas: Whose Move Next? Guest: Paul N. Ylvisaker, The Ford Foundation

CBS Viewing Date* 1962-1963	Lesson No.	Subject of Lesson
Apr. 3	127	The Economics of Education Guest: Theodore W. Schultz, The University of Chicago
Apr. 4	128	Promise and Puzzle in Automation (Part I)
Apr. 5	129	Promise and Puzzle in Automation (Part II)
Apr. 8	(130	Methods)
Apr. 9	131	The Prospects for Greater Growth Guest: James Tobin, Council of Economic Advisers
Apr. 10	132	What If Peace Breaks Out? Guest: Emile Benoit, Columbia University
XIV. The United States in World Trade		
Apr. 17	133	The U.S. Balance of Payments
Apr. 18	134	The Economics of Trading Among Nations
Apr. 19	(135	Methods)
Apr. 22	136	Tariffs, Quotas, and All (Part I)
Apr. 23	137	Tariffs, Quotas, and All (Part II)
Apr. 24	138	Tariffs, Quotas, and All (Part III) Guest: Willard Thorp, Amherst College
Apr. 25	139	America and the European Common Market
Apr. 26	(140	Methods)
XV. The United States and the Underdeveloped Nations		
Apr. 29	141	The Economics of Underdevelopment
Apr. 30	142	The Prospects for Rapid Growth
May 1	143	India: Planning for Growth (Part I)
May 2	144	India: Planning for Growth (Part II) Guest: B. K. Nehru, Ambassador from India to the United States
May 3	(145	Methods)
May 6	146	American Aid Today
May 7	147	American Aid Tomorrow Guests: Max F. Millikan, Massachusetts Institute of Technology Alfred C. Neal, Committee for Economic Development
May 8	(148	Review Session)
XVI. A World of -isms		
May 9	149	American Capitalism: A Restatement
May 10	(150	Methods)
May 13	151	The Foundations of Socialism
May 14	152	Democratic Socialism: A British View Guest: Lord Morrison of Lambeth (Herbert S. Morrison)
May 15	153	Communism: The Russian Model
May 16	154	How the Soviet Economy Works
May 17	(155	Methods)
May 20	156	Economic Growth in the U.S.S.R., A Comparative Appraisal Guest: Abram Bergson, Harvard University
May 21	157	Lessons from the -Isms
XVII. In Conclusion		
May 22	158	Freedom, Growth, and Stability in the American Economy Guests: G. L. Bach, Carnegie Institute of Technology C. Lowell Harriss, Columbia University Campbell R. McConnell, University of Nebraska Paul A. Samuelson, Massachusetts Institute of Technology
May 23	159	The End is Just the Beginning
May 24	(160	Methods)

FELLOWSHIPS AND GRANTS

The Social Science Research Council's annual announcement describing fellowships and grants to be awarded in 1962-63 is now ready for distribution. It lists research training fellowships, faculty research fellowships, grants-in-aid of research, without major change and states that international conference travel grants will again be offered. Applications for some categories of awards are due not later than November 1, 1962. Inquiries should be addressed to the Social Science Research Council, Fellowships and Grants, 230 Park Ave., New York 17, N.Y.

The American Council of Learned Societies announces the continuation of aid to scholars in the form of fellowships, grants-in-aid and travel grants to international conferences. Address inquiries to Miss Marie J. Medina, American Council for Learned Societies, 345 East 46th Street, New York 17, N.Y.

Grants for area programs under joint ACLS-SSRC sponsorship will be offered to mature scholars for research in the social sciences and humanities on certain foreign areas. Grants for research on Africa South of the Sahara, on Latin America, and on the Near and Middle East (including North Africa) will be administered by the Social Science Research Council; while those for Asian Studies and for Slavic and East European Studies will be administered by the American Council of Learned Societies. Communications should be sent to the administering Councils at the addresses given in the two paragraphs above.

The National Science Foundation announces that the next closing date for receipt of basic research proposals in the social sciences is October 1, 1962. Proposals received prior to this date will be reviewed and notification of the Foundation's action will be made within four months. Proposals received after October 1, 1962 will be reviewed following the winter closing date of February 1, 1962. Inquiries should be addressed to the Division of Social Sciences, National Science Foundation, Washington 25, D.C.

Applications from younger faculty members and graduate students interested in continuing their study and research in the Soviet Union for all or part of the 1963-1964 academic year will be accepted by the Inter-University Committee on Travel Grants through November 16, 1962. Persons in all fields of study are encouraged to apply, provided that they can show reasonable professional and scholarly benefit to be derived from study and research in the Soviet Union. Applicants must be American citizens, and not more than approximately forty years of age. For further information as to other eligibility requirements and for application forms, write to Stephen Viederman, deputy chairman, Inter-University Committee on Travel Grants, Indiana University.

The Research Institute on Communist Affairs, at Columbia University, functioning under the Faculty of International Affairs, was established in October 1961. Its purpose is to study international communism and to examine the organization and activities of the Communist bloc. The Research Institute is designed to supplement the various regional studies conducted at Columbia University by the Russian Institute, the East Asian Institute, the Near and Middle East Institute, the Latin American Institute, the European Institute, the Program on East Central Europe, and the Program of African Studies. The Research Institute on Communist Affairs is devoted entirely to research and to the study of communism in its various international manifestation.

The Research Institute will make grants and/or its facilities available, either directly or jointly with the other Institutes to U.S. or foreign scholars who would like to work on a particular research project at the Research Institute, usually for approximately a year, as visiting research fellows, and to qualified government officials who might wish to spend a year free from official duties working within Columbia University on a research project pertaining to Communist affairs. For further inquiries, write to The Secretary, The Research Institute on Communist Affairs, Columbia University, New York 27, N.Y.

Two National Samples of the Population of the United States

In the June 1962 issue of the *Review*, announcement was made that the Bureau of the Census is planning to make available, on a cost basis, reels of magnetic tape or a set of

punchcards containing a one-in-a-thousand sample of the population of the United States, based on the returns of the 1960 Census. The Census Bureau has now completed its plans for this project. In addition to the one-in-a-thousand (.1 per cent) sample, a one-in-ten-thousand (.01 per cent) sample will also be prepared. The latter will be drawn from the .1 per cent sample set of punchcards and will contain the same population and housing information. Among the many subjects covered are personal and family income, employment status, occupation, industry, geographic mobility, education, automobiles, and housing facilities and equipment.

A detailed description of the content of the tape and punchcards on which the samples will be available and information as to cost can be obtained by writing to the Director, Bureau of the Census, Washington 25, D.C.

Announcements

The annual meeting of the Conference on the History of Western America will be held at the Albany Hotel, Denver, Colorado, October 11-13, 1962. R. G. Athearn, of the University of Colorado, is the program chairman. Papers will represent disciplines in social sciences, the humanities and the sciences.

The Industrial College of the Armed Forces extends an invitation to qualified civilians in business, industry and the professions to enroll in its graduate-level correspondence course, entitled "The Economics of National Security." Operating under the direction of the Joint Chiefs of Staff, the Industrial College conducts courses of study in the economic and industrial aspects of national security in the context of both national and world affairs, giving due consideration to military, logistical, administrative, scientific, technological, political, and social factors affecting national security.

Deaths

Lee Galloway, Winter Park, Florida, January 31, 1962.

Orville J. Hall, Fayetteville, Arkansas, September 27, 1961.

George S. Mitchell, Glencoe, Scotland, April 12, 1962.

Charles E. Persons, Mount Vernon, Iowa.

Paul Studenski, November 2, 1961.

Retirements

Benjamin H. Beckhart, Columbia University.

Raymond T. Bye, Wharton School, University of Pennsylvania.

Samuel M. Derrick, University of South Carolina School of Business Administration.

Herbert B. Dorau, New York University School of Commerce.

H. LaRue Frain, Wharton School, University of Pennsylvania.

John H. Frederick, University of Maryland.

Milton S. Heath, University of North Carolina School of Business Administration.

Paul V. Horn, New York University School of Commerce.

Lucy W. Killough, Wellesley College.

Gertrude P. Meek, Florida State University.

Clyde W. Phelps, University of Southern California.

William E. Warrington, Wharton School, University of Pennsylvania.

Elmer Wood, as emeritus professor, University of Missouri.

Visiting Foreign Scholars

George C. Archibald, The London School of Economics; acting associate professor of economics, University of California, Berkeley, 1962-63.

Antonius P. Barten, Econometric Institute, Netherlands School of Economics, Rotterdam; visiting lecturer in economics, University of California, Berkeley, 1962-63.

Duncan Black, University College of North Wales: visiting scholar at Thomas Jefferson Center for Studies in Political Economy, University of Virginia, fall 1962; visiting professor of economics and political science, University of Rochester, spring 1963.

Burgess D. Cameron, Australian National University: visiting professor, department of economics, University of California, Berkeley, fall 1962.

Thomas R. DeGregori, University of Khartoum, Sudan: visiting lecturer in economics, University of Texas.

John H. Habakkuk, Oxford University: visiting Ford research professor, Department of Economics, University of California, Berkeley, 1962-63.

Colin D. Harbury, University of Birmingham, England: visiting lecturer in economics, San Diego State College, 1962-63.

John Lübbert, Kiel University, Germany: visiting associate professor, department of economics, University of Illinois.

Paul P. Streeten, Balliol College, Oxford; fellow, Center for Advanced Studies, Wesleyan University.

Tore S. Thonstad, University of Oslo: visiting professor of economics, University of Minnesota.

John Wise, University of Birmingham, England: visiting professor of economics, Stanford University.

John Wiseman, The London School of Economics: visiting professor of economics, University of California, Berkeley, 1962-63.

Promotions

Arthur T. Andersen: assistant professor of economics, Boston University.

Leo I. Bakony: associate professor of economics, Southern Methodist University.

Joseph S. Berliner: professor of economics, Syracuse University.

James H. Blackman: professor, School of Business Administration, University of North Carolina.

George F. Break: professor of economics, University of California, Berkeley.

Phillip D. Cagan: professor of economics, Brown University.

Vincent Cangelosi: associate professor of business administration, University of Arkansas College of Business Administration.

S. H. Chou: professor of economics, University of Pittsburgh.

Jacob Cohen: professor of economics, Bowling Green State University.

Joseph D. Coppock: research professor of economics, Earlham College.

J. M. Culbertson: professor of economics and commerce, University of Wisconsin.

Lance Davis: professor of economics, Purdue University.

Richard M. Davis: professor of economics, University of Oregon.

Ralph L. Day: associate professor, department of marketing, University of Texas College of Business Administration.

Milton T. Edelman: professor of economics, Southern Illinois University.

Sidney P. Feldman: associate professor of business administration, University of Kansas School of Business.

C. E. Ferguson: professor, department of economics and business administration, Duke University.

William H. Fink: professor of economics, University of Arizona.

Joe S. Floyd, Jr.: professor, School of Business Administration, University of North Carolina.

Leonard J. Garrett: assistant professor, geography and industry department, Wharton School, University of Pennsylvania.

- Gregory Grossman: professor of economics, University of California, Berkeley.
- James M. Henderson: professor of economics, University of Minnesota.
- Charles Howe: associate professor of economics, Purdue University.
- Dell B. Johannesen: associate professor, School of Business Administration, University of North Carolina.
- Paul E. Junk: associate professor of economics, University of Missouri.
- Arcadius Kahan: associate professor of economics, University of Chicago.
- Gerald J. Karaska: assistant professor, department of geography and industry, Wharton School, University of Pennsylvania.
- Thomas F. Keller: associate professor, department of economics and business administration, Duke University.
- Sidney Klein: associate professor of economics, Rutgers—the State University.
- A. J. Kondonassis: associate professor of economics, University of Oklahoma.
- Juanita M. Kreps: associate professor, department of economics and business administration, Duke University.
- William L. Larger: associate professor of marketing, University of Louisville School of Business.
- Henry A. Latané: professor, University of North Carolina School of Business Administration.
- Stewart M. Lee: professor of economics, Geneva College.
- Herbert S. Levine: associate professor of economics, Wharton School, University of Pennsylvania.
- Robert W. Lewis: associate professor of business administration, University of Kansas School of Business.
- H. H. Liebhafsky: professor of economics, University of Texas.
- Edward O. Lutz: associate professor, Brooklyn College.
- Edward Marcus: professor, Brooklyn College.
- Shelley M. Mark: professor of economics, University of Hawaii.
- Campbell R. McConnell: professor of economics, University of Nebraska.
- Leahmae McCoy: associate professor of economics, University of Arizona.
- Jacob Mincer: professor of economics, Columbia University.
- Jerry Miner: associate professor, department of economics, Syracuse University.
- Vernon G. Morrison: associate professor, department of economics, Southern Illinois University.
- Leon Moses: professor and director of research, Transportation Center, Northwestern University.
- Walter C. Neale: associate professor of economics, University of Texas.
- Erwin E. Nemmers: professor of business administration, Northwestern University Graduate School of Business Administration.
- Archie J. Nichols: professor, Butler University.
- Wallace C. Peterson: professor of economics, University of Nebraska.
- Richard W. Poole: associate professor of economics, Oklahoma State University.
- W. F. Putnam: assistant professor, University of South Carolina School of Business Administration.
- Charles A. Ray: associate professor of management, New York University School of Commerce, Accounts, and Finance.
- Marion Ross: associate professor of economics, Mills College.
- Richard L. Rowan: assistant professor, department of geography and industry, Wharton School, University of Pennsylvania.

George G. Sause: professor of economics, Lafayette College.

Eric Schenker: associate professor of economics, University of Wisconsin, Milwaukee.

Jacob Schmookler: professor of economics, University of Minnesota.

Steven J. Shaw: professor, University of South Carolina School of Business Administration.

John A. Shubin, professor of economics, New York University School of Commerce.

Milton Silver: assistant professor, department of geography and industry, Wharton School, University of Pennsylvania.

Norman J. Simler: associate professor of economics, University of Minnesota.

Sidney I. Simon: professor of economics, Rutgers—the State University.

Burnard Sord: professor of management and associate dean of the College of Business Administration, University of Texas.

Charles E. Staley: associate professor of economics, University of Kansas.

Jerome L. Stein: professor of economics, Brown University.

Benjamin H. Stevens: associate professor of regional science, Wharton School, University of Pennsylvania.

James A. Storer: professor of economics, Bowdoin College.

Gerald E. Thompson: associate professor of economics, University of Nebraska.

Rollie Tillman: assistant professor, University of North Carolina School of Business Administration.

Lewis E. Wagner: professor, department of economics, University of Illinois.

Marshall D. Wattles: professor of economics, University of Oregon.

Francis O. Woodard: assistant professor of economics, University of Nebraska.

Rolf S. Wubbels: professor of finance, New York University School of Commerce.

Administrative Appointments

Ralph L. Andreano: associate professor and chairman, department of economics, Earlham College.

J. F. Bennett: assistant treasurer, Standard Oil Company (New Jersey).

W. Donald Bowles: associate professor and chairman, department of economics, American University.

Louis F. Buckley: regional administrator, Bureau of Employment Security, U. S. Department of Labor, New York City.

J. Whitney Bunting: dean of the College of Business Administration, University of Georgia.

Allan M. Cartter: vice president, American Council on Education.

Paul G. Clark: acting chairman, department of economics, Williams College.

Sidney Davidson: director and Arthur Young professor of accounting, Institute of Professional Accountancy, Graduate School of Business, University of Chicago.

Walter D. Fackler: associate dean, Graduate School of Business, University of Chicago.

Claude S. George, Jr.: associate dean, School of Business Administration, University of North Carolina.

Paul C. Goetz: acting dean, School of Business Administration, St. Mary's University.

Henry Grayson: professor and chairman of the department of business economics, University of Hawaii.

Burton C. Hallowell: vice president, Wesleyan University.

Edgar M. Hoover, director, Center for Regional Economic Studies, University of Pittsburgh.

Robert H. Johnson: chief of mission, The Brookings Institution Economic Specialists

Group in Saigon for another two-year tour, having resigned from the University of Iowa.

Jacob J. Kaplan: director, International Development Organizations Staff, Agency for International Development.

Burton H. Klein: head, economics department, RAND Corporation.

Irving B. Kravis: chairman, economics department, Wharton School, University of Pennsylvania.

William H. Meckling: head, economics division, Operations Evaluation Group, Arlington, Virginia.

Wiley S. Mitchell: acting dean, University of Kansas School of Business.

Aurelius Morgner: chairman, department of economics, University of Southern California.

Ronald R. Olsen: acting chairman, department of economics, University of Kansas.

Joseph A. Pechman: director of economic studies, Brookings Institution.

John H. Prime: dean, School of Commerce, Accounts, and Finance, New York University.

Edwin P. Reubens: acting chairman, department of economics, The City College of New York.

Warren C. Scoville: director, Bordeaux Center, University of California, Bordeaux, France.

James R. Surface: vice-chancellor and dean of faculties, University of Kansas.

W. Bayard Taylor: dean, Claremont Graduate School, Claremont Men's College.

Carey C. Thompson: chairman, department of economics, University of Texas.

W. Allen Wallis, University of Chicago: president, University of Rochester.

Marshall D. Wattles: acting dean, College of Liberal Arts, University of Oregon.

Appointments

Robert Adams: instructor in economics, University of Michigan.

Irma Adelman: associate professor of political economy, Johns Hopkins University.

Sydney N. Afriat: associate professor of economics, Rice University.

Dennis J. Aigner, University of California: assistant professor of economics, University of Illinois.

Isabel B. Anderson: instructor in economics, department of economics and political science, University of Saskatchewan.

Leslie P. Anderson, University of Arizona: assistant professor of economics and management, Purdue University.

Richard E. Attiye: assistant professor of economics, Stanford University.

G. Paul Balabanis, University of California, Berkeley: assistant professor, department of economics, San Diego State College.

Richard Baltz: assistant professor of economics, College of Business Administration, University of Arkansas.

Morton S. Baratz: visiting associate professor of economics, Wharton School, University of Pennsylvania.

Edward E. Barr, Freeport Sulphur Co.: long-range planning analyst, Sun Chemical Corporation.

William B. Barrett: assistant professor, department of accounting, University of Texas College of Business Administration.

Winston C. Beard, University of Arkansas: assistant professor, department of finance, College of Business Administration, University of Texas.

Morris Beck, Rutgers—the State University: on special project at the National Bureau of Economic Research.

Hrack Bedrosian: instructor in management, New York University School of Commerce.

Maurice Benowitz: visiting lecturer in economics, Hofstra College.

Dean F. Berry: assistant professor of geography and industry, Wharton School, University of Pennsylvania.

William K. Bethauser: instructor in management, New York University School of Commerce.

Robert C. Bingham, University of Nebraska: Kent State University.

Howard R. Bloch: assistant professor of economics, Butler University.

George B. Breckenridge: instructor in political economy, department of economics and political science, University of Saskatchewan.

Albert Buckberg, Iowa State University: U. S. Bureau of the Budget.

Dean B. Cameron: visiting professor of economics, Wharton School, University of Pennsylvania.

David J. Cantor: instructor, department of economics, Boston University.

William M. Capron, Stanford University: Council of Economic Advisers, Washington, D.C.

John A. Carlson, Cornell University: assistant professor of economics, Purdue University.

Joseph Chao: assistant professor of economics, Denison University.

Kang Chao: assistant professor of economics, University of Michigan.

Frank C. Child, Michigan State University: associate professor of economics, University of California, Davis.

George A. Christy: assistant professor of finance, University of Oregon.

Herman Clurman: associate professor of accounting, New York University School of Commerce.

Robert T. Collins: professor of economics, School of Business Administration, University of South Carolina.

Maynard S. Comiez, Federal Reserve System: fiscal economist, Bureau of the Budget.

R. Gene Conatser: instructor in economics, Tarleton State College.

Leonard J. Corti: vice president, Allied Research Associates, Inc., Boston, Massachusetts.

Robert L. Crouch, University of California, Los Angeles, and The London School of Economics: lecturer, Northwestern University.

John H. Cover, retired from the University of Maryland: economic planning consultant to Syria under the United Nations.

Paul A. Crowe, Tulane University: assistant professor of economics, College of Business Administration, University of Georgia.

Frederick R. Dahl, Federal Reserve System: Balance of Payments Advisor to the Central Bank of Nigeria, with the Agency for International Development.

Tom E. Davis: associate professor, Cornell University.

George Delehanty, Massachusetts Institute of Technology: assistant professor, Northwestern University.

Paul Demeny: assistant professor of economics, Princeton University.

Edward F. Denison, Committee for Economic Development: senior staff, Brookings Institution.

Herbert S. Dennenberg: assistant professor of insurance, Wharton School, University of Pennsylvania.

William G. Dewald: assistant professor of economics, University of Chicago.

Pedro P. Diaz Maestre: assistant professor of accounting, College of Business Administration, University of Georgia.

Frank G. Dickinson, National Bureau of Economic Research: professor of economics, Northern Illinois University.

Joel B. Dirlam: professor of economics, Michigan State University.

Giuseppe M. Ferrero diRoccafererra: associate professor, geography and industry department, Wharton School, University of Pennsylvania.

Manoranjan Dutta: visiting assistant professor of economics, Rutgers—The State University.

Henry Einhorn: assistant professor of economics, Michigan State University.

Walter L. Eisenberg: associate professor of economics, Hunter College.

Houston G. Elan: instructor in marketing, New York University School of Commerce.

Roger K. Eyvindson: research associate, department of economics, Iowa State University.

David Fand, Southern Methodist University: appointment at the University of Buffalo.

Attiat Farag: assistant professor of economics, Southern Methodist University.

Helen Farr, Bryn Mawr College: instructor, Mount Holyoke College.

Alan E. Fechter: assistant professor of economics, research staff, Center for Regional Economic Studies, University of Pittsburgh.

John R. Felton: assistant professor of economics, University of Nebraska.

Albert Fishlow, University of California: on the staff of the National Bureau of Economic Research, beginning February 1963.

Miles Fleming: lecturer in economics, Wharton School, University of Pennsylvania.

John E. Floyd, University of Chicago: assistant professor of economics, University of Washington.

Herman Freudenberger: associate professor of economics, Tulane University.

Robert E. Gallman: associate professor of economics, School of Business Administration, University of North Carolina.

Francis W. Gathof, Jr.: assistant professor, department of economics, Beloit University.

Herbert Geyer, Southern Methodist University: associate professor of economics, Tulane University.

Harry J. Gilman: lecturer in economics, Rutgers—the State University.

Alex S. Gonzales, University of Oregon: assistant professor of business administration and economics, The College of Idaho.

Craufurd D. Goodwin, York University, Toronto, Canada: assistant professor of economics, Duke University.

Tom E. Gossett: assistant professor, department of accounting, College of Business Administration, University of Texas.

David G. Greene: lecturer in economics, Rutgers—the State University.

Mark R. Greene: professor of insurance, University of Oregon.

Melvin L. Greenhut: professor, department of economics, Florida State University.

Joan Greenwood, University of California: instructor in economics, Wellesley College.

Charles H. Griffin: visiting professor, department of accounting, College of Business Administration, University of Texas.

Bertram M. Gross, Maxwell School, Syracuse University: Leatherbee Lecturer on management, Harvard Graduate School of Business Administration, fall term 1962.

Herbert G. Grubel: acting assistant professor of economics, Stanford University.

John D. Guilfoil: instructor in economics, New York University School of Commerce.

Jack M. Guttentag: associate professor of finance, Wharton School, University of Pennsylvania.

Harry P. Guenther: visiting associate professor of finance, University of Minnesota.

Josef Hadar: assistant professor of economics, Michigan State University.

Geoffrey B. Hainsworth, Harvard University: Research School of Pacific Studies, Australian National University.

Alvin H. Hansen, Harvard University: distinguished visiting professor, Michigan State University.

Clyde E. Harris, University of Arkansas: assistant professor of economics, College of Business Administration, University of Georgia.

Dale S. Harwood, Jr.: associate professor of accounting, University of Oregon.

Leland Hazard: visiting professor of geography and industry, Wharton School, University of Pennsylvania.

Bernard P. Herber: assistant professor of economics, University of Arizona.

Alan W. Heston: assistant professor of economics, Wharton School, University of Pennsylvania.

George W. Hilton: lecturer in economics, University of California, Los Angeles.

Merle Hostetler, Federal Reserve Bank of Cleveland: vice president and economist, Union Commerce Bank, Cleveland, Ohio.

Norman S. Hubbard, Yale University: instructor in economics, Hofstra College.

John A. Hynes, University of Chicago: assistant professor of economics, University of Washington.

Leland H. Jenks: visiting professor of economic history, Tulane University.

Robert S. Johnson: lecturer, James Wilson department of economics, University of Virginia.

Thomas M. Johnson: assistant professor of economics, University of Missouri.

Walter L. Johnson: instructor, department of economics and business administration, Duke University.

Lawrence D. Jones, Jr., Harvard University: assistant professor of economics, Wesleyan University.

Norman Jones: research economist, The RAND Corporation.

Charles J. Jorgensen: professor of economics, University of Washington.

Joseph A. Klapowski: instructor in accounting, New York University School of Commerce.

Herbert E. Klarman: lecturer in political economy and associate professor of public health administration, Johns Hopkins University.

K. C. Kogiku: assistant professor of economics, University of California, Riverside.

James C. LaForce, Jr.: visiting assistant professor of economics, University of California, Los Angeles.

Kelvin J. Lancaster: professor of political economy, Johns Hopkins University.

Robert Landolt, University of Texas: professor of economics and business, Morris Harvey College, Charleston, West Virginia.

Robert Lawrence: instructor in economics, University of Michigan.

J. William Leasure, Princeton University: assistant professor, department of economics, San Diego State College.

Stanley Lebergott, U. S. Bureau of the Budget: professor, Wesleyan University.

John D. Lehman, Denison University: assistant professor of economics, Wells College.

Eugene M. Lerner: visiting lecturer in economics, Hofstra College.

Charles L. Leven, University of Pennsylvania: associate professor of economics, research associate, Center for Regional Economic Studies, University of Pittsburgh.

Bertram F. Levin: visiting associate professor, James Wilson department of economics, University of Virginia.

E. E. Liebhafsky, Texas A. and M. College: visiting professor, North Carolina State College.

- Nissan Liviatan: lecturer in economics, Wharton School, University of Pennsylvania.
- Charles R. Lockyer, now completing an assignment with Public Administration Service in Thailand: research associate, Bureau of Business Research, University of Kentucky.
- Melvin Lurie: visiting associate professor of economics, Wesleyan University.
- Matityahu Marcus: lecturer in economics, Rutgers—the State University.
- F. Ray Marshall: professor of economics, University of Texas.
- Alvin L. Marty: visiting associate professor of economics, University of Chicago.
- Leo V. Mayer: research associate, department of economics, Iowa State University (Ames).
- Jackson M. McClain, University of Alabama: research associate, Bureau of Business Research, University of Kentucky.
- David Meiselman: position with the U. S. Treasury.
- Jack Melitz: assistant professor of economics, Rice University.
- Ronald Miller: assistant professor of regional science, Wharton School, University of Pennsylvania.
- William L. Miller, Auburn University: professor of economics, College of Business Administration, University of Georgia.
- John B. Miner: professor of management, University of Oregon.
- Robert A. Minick, University of Texas: assistant professor of economics, Fresno State College, California.
- Franco Modigliani, Northwestern University: professor, School of Industrial Management, Massachusetts Institute of Technology.
- Dannie J. Moffie: associate professor of business administration, School of Business Administration, University of North Carolina.
- Russell L. Moran, Cornell University: assistant professor, department of economics, University of Illinois.
- M. G. Mueller: assistant professor of economics, University of California, Los Angeles.
- Robert G. Murdick: professor of management, School of Business, University of Louisville.
- Edward J. Nell, Nuffield College, Oxford: assistant professor of economics, Wesleyan University.
- Hugh O. Nourse: assistant professor of economics, Washington University.
- John C. O'Brien: assistant professor of economics, department of economics and political science, University of Saskatchewan.
- Walter Y. Oi, University of Chicago: visiting associate professor of economics, University of Washington.
- William Pendleton: associate professor of economics and research associate, Center for Regional Economic Studies, University of Pittsburgh.
- Mark Perlman, Johns Hopkins University: professor of economics, University of Pittsburgh.
- Keith Phillips: assistant professor, economics department, Syracuse University.
- James Pickett: visiting assistant professor of economics, department of economics and political science, University of Saskatchewan.
- Lon Polk: instructor in economics, University of Michigan.
- Joel Popkin, University of Pennsylvania: lecturer, Northwestern University.
- James Price: assistant professor, economics department, Syracuse University.
- Frederic Pryor: assistant professor of economics, University of Michigan.
- John T. Rader: assistant professor of economics, University of Missouri.
- Helen Raffel: assistant professor of economics, Wharton School, University of Pennsylvania.

J. A. Ramirez, First Western Bank: Lockheed Missiles and Space Company.

J. C. Rao: lecturer in finance, Wharton School, University of Pennsylvania.

Thomas A. Reiner: lecturer in regional science, Wharton School, University of Pennsylvania.

Edward F. Renshaw: assistant professor, School of Business Administration, University of North Carolina.

Timothy Rice: assistant professor, economics department, Syracuse University.

Bruce W. Roberson: instructor, department of accounting, College of Business Administration, University of Texas.

Robert Robertson, University of Cincinnati: assistant professor of economics, Mount Holyoke College.

David Robinson: associate professor of business administration, College of Business Administration, University of Arkansas.

Jack L. Robinson, Ohio State University: assistant professor of economics, department of economics, University of Oklahoma.

Peter Rosko: lecturer in finance, University of Minnesota.

Simon Rottenberg: professor of industrial relations, University of Buffalo.

G. Gareld Rusk, University of Texas: assistant professor of economics, Sam Houston State College.

Seymour Sacks: associate professor, economics department, Syracuse University.

Arnold E. Saffer: assistant professor of economics, Rice University.

Roy J. Sampson: associate professor of transportation, University of Oregon.

John M. Scheidell, Kalamazoo College: associate professor of economics, College of Business Administration, University of Georgia.

Bernard Schwartz: visiting professor, Michigan State University, spring term 1963.

Robert C. Shackelford, University of California: instructor, department of economics, University of Illinois.

Irwin A. Shapiro, Northwestern University: assistant professor, department of marketing, College of Business Administration, University of Texas.

Ronald A. Shearer, University of Michigan: Toronto Royal Commission on Banking and Finance.

Howard J. Sherman, Wayne State University: assistant professor of economics, California Institute of Technology.

Robert A. Sigafos, Stanford Research Institute: senior research fellow in economics, California Institute of Technology.

Hugo M. Skala: professor of economics, Fairleigh Dickinson University, Rutherford Campus.

Norman R. Smith: assistant professor of marketing, University of Oregon.

Robert E. Smith, University of Utah: lecturer in economics, University of Oregon.

Wendell R. Smith: professor of marketing, Wharton School, University of Pennsylvania.

Eugene Smolensky: visiting assistant professor of economics, Wharton School, University of Pennsylvania.

Allen R. Solem: professor of management, University of Minnesota.

Edward Stevens: assistant professor, economics department, Syracuse University.

Ian Stewart: instructor, Dartmouth College.

Joann P. Stewart: instructor, economics department, Boston University.

Milton D. Stewart, University of Texas: assistant professor, University of Maryland Extension, Japan.

Bernt P. Stigum: assistant professor, department of economics, Cornell University.

Marcia Stigum, Massachusetts Institute of Technology: instructor in economics, Wellesley College.

Boris C. Swerling, Food Research Institute, Stanford University: Division of International Finance, Board of Governors of the Federal Reserve System.

Donald G. Tailby, Lehigh University: assistant professor of economics, College of Business Administration, University of Georgia.

Michael B. Teitz: lecturer in regional science, Wharton School, University of Pennsylvania.

Earl A. Thompson: assistant professor of economics, Stanford University.

Paul Thompson: instructor in economics, Michigan State University.

Charles M. Tiebout, University of California, Los Angeles: professor of economics, University of Washington.

Jack Topiol: instructor in economics, Rutgers—The State University.

Clarence O. Tuck: instructor in accounting, New York University School of Commerce, Accounts, and Finance.

Leo J. Turner: instructor in marketing, New York University School of Commerce.

Dale Tussing: lecturer, economics department, Syracuse University.

Hylke Van De Wetering: research associate, department of economics, Iowa State University.

Peter Vandome: lecturer in statistics, Wharton School, University of Pennsylvania.

Jack R. Vernon: assistant professor of economics, Michigan State University.

Caron R. Waits, University of Texas: assistant professor of economics, Texas Christian University.

Kornelis J. Walraven, University of Arkansas: assistant professor, department of finance, College of Business Administration, University of Texas.

James E. Walter: professor of finance, Wharton School, University of Pennsylvania.

Ralph J. Watkins: vice president and member of Board of Directors, Surveys & Research Corporation; is continuing to supervise the Brookings Institution Economic Specialists Group in Saigon.

Donald Q. Webb: assistant professor of economics, Centre College.

Harrison Wehner: instructor in economics, University of Michigan.

Jerry Wells: instructor in economics, University of Michigan.

William Wendt: assistant professor of economics, American University.

Katherine M. West: assistant professor, Brooklyn College.

W. Terry Wilford, Southern Methodist University: assistant professor of economics, University of Georgia.

Thomas H. Williams: assistant professor, department of accounting, College of Business Administration, University of Texas.

Mervyn W. Wingfield: associate professor of accounting, School of Business Administration, University of South Carolina.

Robert I. Winter: instructor in economics, New York University School of Commerce.

David McC. Wright, McGill University: professor of economics, College of Business Administration, University of Georgia.

Leaves for Special Appointments

Kenneth G. Ainsworth, Allegheny College: economist, U. S. House of Representatives Subcommittee on State Taxation of Interstate Commerce, 1961-62 and 1962-63.

Robert J. Alexander, Rutgers—The State University: visiting professor, Columbia University, 1962-63.

Willard Allan, Standard Oil Company (Ohio): Head of the Department of Economics and Statistics, The Operating Companies (Consortium), Teheran, Iran, for two years.

Leslie P. Anderson, Purdue University: economist-statistician for a special study of securities markets by the Securities and Exchange Commission.

Lowell D. Ashby, University of North Carolina: to work on a research program with the U. S. Department of Commerce.

Marto A. Ballesteros, University of Washington: senior economist, Tax and Fiscal Policy Unit of the Pan American Union sponsored by the Organization of American States, 1962-63.

Robert L. Basmann, University of Chicago: visiting professor of economics, University of Minnesota, spring quarter, 1962-63.

Martin J. Beckmann, Brown University: University of Bonn, first semester 1962-63.

James C. D. Blaine, University of North Carolina: transportation consultant to the National Council for Applied Economic Research, New Delhi, India, 1962-63.

Louis K. Brandt, University of Mississippi: visiting professor, College of Business Administration, University of Texas.

Martin Bronfenbrenner, University of Minnesota: visiting professor of economics, Carnegie Institute of Technology, 1962-63.

Denzel C. Cline, Michigan State University: research and lecturer, University of Ankara, Turkey, 1962-63.

Sanford Cohen, Butler University: visiting professor, Institute of Industrial Relations, University of Illinois, 1962-63.

John M. Culbertson, University of Wisconsin: visiting professor of economics, University of California, Berkeley, 1962-63.

Stephen Enke, Duke University: assistant to the president, Institute for Defense Analysis, Washington, D.C., 1962-63.

Lowell E. Gallaway, San Fernando Valley State College: visiting associate professor, University of Minnesota, 1962-63.

William B. Gates, Jr., Williams College: economist, Surveys and Research Corporation, Djakarta, Indonesia.

Peter Gregory, University of Minnesota: staff member of a program in industrial relations and labor economics at the University of Chile, Santiago, sponsored by AID and administered by Cornell University, 1962-63.

Richard B. Heflebower, Northwestern University: visiting professor, Harvard University, 1962-63.

John P. Henderson, Michigan State University: University of Nigeria, Nsukka, for two years.

William R. Hughes, Wesleyan University: economist with the Federal Power Commission, 1962-63.

John M. Hunter, Michigan State University: advisor to the Institute of Economic Research, University of Cordoba, Argentina, 1962-63.

John H. Kareken, University of Minnesota: consultant, U. S. Treasury Department, 1962-63.

Richard H. Leftwich, Oklahoma State University: visiting professor of economics, University of Chicago, to serve as consultant to the department of economics, The Catholic University of Chile, Santiago.

Daniel Marx, Jr., Dartmouth College: senior economist, Stanford Research Institute, 1962-63.

E. Scott Maynes, University of Minnesota: consultant, Bureau of the Census, Washington, D.C., 1962-63.

Paul Medow, Rutgers—The State University: Ford Foundation Faculty Research Fellowship, economic development and administration program, 1962-63.

John A. Menge, Dartmouth College: National Science Foundation Fellow, Nuffield College, Oxford University, 1962-63.

J. W. Milliman, Indiana University: temporary assignment with Resources for the Future, Inc.

Judson Neff, University of Texas: to teach industrial management as a member of the economics faculty for the University of Wisconsin-Ford Foundation Project at Gadjah Mada University, Jogjakarta, Indonesia.

Richard L. Pfister, Dartmouth College: consultant, Office of International Tax Affairs, U. S. Treasury Department.

Howard S. Piquet, Legislative Reference Service, Library of Congress: Ford distinguished professor, New York University, fall semester 1962-63.

Vernon W. Ruttan, Purdue University: economist, Council of Economic Advisers, Washington, D.C.

Sayre P. Schatz, Hofstra College: senior research fellow, Nigerian Institute for Social and Economic Research, 1962-63.

Norman J. Simler, University of Minnesota: senior economist, Council of Economic Advisers, Washington, D.C., 1962-63.

Larry A. Sjaastad, University of Minnesota: department of economics, University of Chicago to establish an Economic Research Center at the National University of Cuyo, Mendoza, Argentina, project sponsored by I.C.A., 1962-63.

Jack Steele, University of Kansas: to teach at IMEDE, Lausanne, Switzerland, for one year.

Milton C. Taylor, Michigan State University: advisor to Pan American Union, Washington, D.C., 1962-63.

George J. Viksnins, Hood College: Board of Governors of the Federal Reserve System, summer 1962; teaching fellow, Georgetown University, 1962-63.

Fred Westfield, Northwestern University: visiting professor, Vanderbilt University, 1962-63.

G. G. Williamson, Jr., University of South Carolina: lecturer at Johns Hopkins University Bologna Center at Bologna, Italy.

Resignations

Roy A. Church, University of Washington.

Kenneth E. Cook, Bureau of Business Research, University of Kentucky.

John D. DeForest, Denison University.

Harry Franklin, Georgetown University.

Jesse Friedman, Georgetown University.

Louis Hamill, University of Oregon.

Harald B. Malmgren, Cornell University.

Thomas Mayer, Michigan State University.

Morton F. Moss, University of Oregon.

William N. Parker, University of North Carolina.

Giulio Pontecorvo, University of Washington.

Melvin Rothbaum, University of California, Los Angeles.

Edward C. Simmons, Duke University.

David E. Snyder, Wharton School, University of Pennsylvania.

Donald F. Swanson, University of South Carolina.

Koji Taira, University of Washington.

Scott D. Walton, University of Oregon.

George Wythe, Georgetown University.

FIFTY-NINTH LIST OF DOCTORAL DISSERTATIONS IN POLITICAL ECONOMY IN AMERICAN UNIVERSITIES AND COLLEGES

The present list specifies doctoral degrees conferred during the academic year terminating June 1962, and theses undertaken in the same period.

General Economics; Methodology

Degrees Conferred

ROBERT T. AVERITT, Ph.D. Texas 1961. The developmental power of institutionalist thinking.

Price and Allocation Theory; Income and Employment Theory; History of Economic Thought

Degrees Conferred

CLOPPER ALMON, JR., Ph.D. Harvard 1962. Consistent forecasting in a dynamic general equilibrium system.

STANLEY BOBER, Ph.D. New York 1962. The cyclical behavior of retail inventories.

JOHN A. CARLSON, Ph.D. Johns Hopkins 1961. Investment decisions in the face of technological change.

CHARLES E. CARPENTER, Ph.D. Colorado 1961. Geographic variations in the consumer price index.

WERNER L. CHILTON, Ph.D. Columbia 1962. Direct business investment and the choice of technology.

MARCIA D. DAVIDSON, Ph.D. Duke 1962. Three Spanish economists of the enlightenment: Campomanes, Jovellanos, Florez Estrada.

RICHARD H. DAY, Ph.D. Harvard 1961. Recursive programming and production response.

EDWARD GREENBERG, Ph.D. Wisconsin 1961. Business investment in new plant and equipment: an empirical study.

MARSHALL M. HALL, Ph.D. Wisconsin 1961. Investment in research and development: a statistical study.

ALBERT A. HIRSCH, Ph.D. Duke 1960. A taxonomic study of certain models of economic growth.

A. C. HOUSTON, Ph.D. Pennsylvania State 1962. The Stockholm School—a study of the evolution of economic theory.

DAVID SHIH-LI HUANG, Ph.D. Washington 1961. The demand for automobiles in 1956 and 1957—a cross-section analysis.

ESTELLE D. JAMES, Ph.D. Mass. Inst. Technology 1961. Reconsideration of the theoretical criteria for investment planning.

LOUIS J. JUNKER, Ph.D. Wisconsin 1962. The social and economic thought of Clarence Edwin Ayres.

MORDECAI, KURZ, Ph.D. 1962. Patterns of growth and valuation in a two sector model.

JOHN E. LA TOURETTE, Ph.D. Rutgers 1962. Innovation and technological change in growth models—a critical study.

CHARLES W. MEYER, Ph.D. Johns Hopkins 1961. The cost function for local telephone service: increasing or decreasing?

- THOMAS S. MORI, Ph.D. Catholic 1962. The theory of supply and demand in the English classical school from Smith to Cairnes.
- ROY E. MURPHY, Ph.D. Stanford 1962. Adaptive processes in economic systems.
- BERNARD NEWTON, Ph.D. Columbia 1962. The economics of Francis Amasa Walker: American economics in transition.
- GEORGE L. PERRY, Ph.D. Mass. Inst. Technology 1961. Aggregate wage determination and the problem of inflation.
- BLAISE F. REINHART, Ph.D. Catholic 1962. The life of Richard Jones and his contribution to economic methodology and theory.
- KRISHNA P. SHARMA, Ph.D. Oregon 1962. A study in the theory of economic growth and income distribution.
- T. N. SRINIVASAN, Ph.D. Yale 1962. Investment criteria and choice of techniques of production.
- BERNT P. STIGUM, Ph.D. Harvard 1962. Statistical decision theory for discrete stochastic processes with applications to dynamic economic theory.
- EARL A. THOMPSON, Ph.D. Harvard 1962. Technical change, its measurement and integration into the theory of the firm with special application to the explanation of the building cycle.
- MARK L. WEHLE, Ph.D. Columbia 1962. The interest elasticity of the ratio of fixed investment to national income as estimated from engineering payout studies.
- GILBERT R. WHITAKER, JR., Ph.D. Wisconsin 1961. Decision unit model of the production and inventory decisions.
- JAMES R. WILLIAMS, Ph.D. Minnesota 1962. An estimation of the parameters in the regression of observed consumption on observed income when both are assumed to include random variables.
- PAN A. YOTOPOULOS, Ph.D. California (Los Angeles) 1962. Disguised unemployment and elastic supplies of labor: the theory and an empirical test for Greece.

Theses in Preparation

- HENRY J. AARON, B.A. California (Los Angeles) 1958; M.A. Harvard 1960. Social welfare financing, capital formation and growth: an international comparison. *Harvard*.
- GLEN ALEXANDRIN, B.A. Alberta 1958. Unemployment in Newfoundland, 1949-1961. *Clark*.
- JOHN J. ARENA, B.A. Yale 1958; M.A. 1960. The Pigou effect and saving: a statistical inquiry. *Yale*.
- RICHARD E. ATTIEYEH, B.A. Williams 1958. The determinants of investment in plant and equipment. *Yale*.
- RALPH BEALS, B.S. Kentucky 1958; M.A. Northwestern 1959. Inventories, expectations and the relation between spot and futures markets. *Mass. Inst. Technology*.
- JACK BEN-RUBIN, B.S. Columbia 1954; M.A. Columbia 1959. The economics of rent control. *New York*.
- ROBERT A. BERRY, B.A. Western Ontario 1959. Welfare implications of non-competitive economies. *Princeton*.
- CHARLES L. COLE, B.A. Southern California 1951; M.B.A. Stanford 1955. Income distribution and the social welfare function: a study of theories of distributive justice. *Southern California*.
- ARTHUR D'ANTONIO. Effect of innovational profit as alternative explanation for differences in short and long run saving functions.
- F. TRENERY DOLBEAR, JR., B.A. Williams 1957; M.A. Yale 1958. Estimation of utility functions in risk situations. *Yale*.
- HERMANN ENZER, B.S. Boston 1959; M.A. 1960. Skilled labor: an analysis of a joint product. *Harvard*.

- CHARLES R. FRANK, JR., B.S. Rensselaer Poly. Inst. 1959. Integer programming and factor and product indivisibilities. *Princeton*.
- JAMES W. FRIEDMAN, B.A. Michigan 1959; M.A. Yale 1960. Individual behavior in oligopolistic markets: an experimental study. *Yale*.
- JAMES P. GANDER, B.A. Saint Mary's 1953; M.A. California (Berkeley), 1959. Economics of the growth of the firm. *California (Berkeley)*.
- LEONARD GROENEVELD, B.S. Rhode Island 1951; M.B.A. 1958. An inquiry into the marketing views of Alfred Marshall. *Florida*.
- ASHOK S. GUHA, B.A. Calcutta 1957; M.A. 1959. The theory of capital-labour substitution and disguised unemployment. *Harvard*.
- RICHARD M. HALFYARD, B.A. California (Los Angeles) 1954; M.A. 1959. The stock of consumer durable and aggregate consumption behavior. *California (Los Angeles)*.
- WAHIDUL HAQUE, B.A. Dacca 1954; M.A. 1956. Dynamic programming and resource allocation. *Stanford*.
- HAROLD M. HOCHMAN, B.A. Yale 1957; M.A. 1959. A study of the potential effects of the introduction of accelerated depreciation on investment. *Yale*.
- THOMAS E. HOLLAND, B.S. Tennessee 1957; M.S. 1958. Inquiry into the ethics and economics of interest. *Duke*.
- JOHN H. HOTSON, B.A. Colorado College 1952; M.A. Pennsylvania 1957. International comparisons of the wage share in business income. *Pennsylvania*.
- CHING-YAO HSIEH, B.A. St. John's (Shanghai) 1939; M.A. George Washington 1958. Aggregate demand theory during the 18th century. *George Washington*.
- SEANE J. HUNT, B.S. Miami 1954; M.A. Yale 1958. Income distribution among college graduates and the rate of return on educational investment. *Yale*.
- ANDREW JACKSON, B.A. George Washington 1943; M.A. 1953. Utility value theory in France to J. B. Say. *George Washington*.
- ALFONS JOACHIMOWSKI, L.L.B. Pozan 1928; M.A. New School 1960. Poverty in the doctrines of the classical English economists. *New School*.
- PAL JONAS, B.A. Dean Ferenc Gymn (Budapest) 1940; Dipl. Josef Nador 1948. Spatial competition and strategy of social political decisions. *Columbia*.
- JOE K. KERBY, B.S. Brigham Young 1959; M.B.A. Northwestern 1960. A limited statistical analysis of the effect of aggregate advertising expenditure on the consumption function. *Columbia*.
- ROBERT W. KILPATRICK, B.A. Haverford 1957; M.A. Yale 1958. Shifting of the corporate income tax. *Yale*.
- SAMUEL S. O. LEE, B.B.A. Hawaii 1952; M.B.A. 1959. Price-level adjustment problems in Korea. *Columbia*.
- SEANE MAGE, B.A. Chicago 1951; B.A. City 1953. Law of the falling tendency of the rate of profit. *Columbia*.
- MATITYAHU MARCUS, B.A. Brooklyn 1959. An evaluation of the capital output ratio as a means of forecasting the growth of output. *Brown*.
- VINCENT G. MASSARO, BS. Canisius 1959; M.A. Notre Dame 1960. Karl Marx and the evolution of economic forms. *Notre Dame*.
- MICHAEL D. MCCARTHY, B.Com. Notre Dame 1957. The sources of technical progress. *Southern Methodist*.
- WILLIAM G. NELSON, B.A. Youngstown 1940; M.L. Pittsburgh 1951. Concepts of the firm with especial reference to their roles in economic analysis. *Pittsburgh*.
- CONSTANCE K. NEWSOM, B.A. Hunter 1958. Demand theory in the English classical school. *Tulane*.
- DALE K. OSBORNE, B.A. Kentucky 1959; M.A. 1961. Studies in the theory of oligopoly. *Kentucky*.

- HANS C. PALMER, B.A. California (Berkeley) 1954; M.A. 1955. The Italian entrepreneur in California. *California (Berkeley)*.
- CHARLES S. ROCKWELL, B.A. Redlands 1954; M.A. California (Berkeley). 1961. Speculation and futures markets. *California (Berkeley)*.
- T. K. RYMES, B.A. Manitoba. Some problems in the theory and measurement of capital. *McGill*.
- SARDY HYMAN, B.S. Brooklyn 1958; M.A. 1959. Determinants of corporate savings. *New School*.
- ARJUN SENGUPTA, B.A. Calcutta 1956; M.A. 1958. The implications of increasing returns and external economies for the theory of economic growth. *Mass. Inst. Technology*.
- ROGER H. SPILDE, B.A. Luther 1956; M.A. Iowa 1958. An appraisal of oligopoly and economic growth. *Iowa*.
- ALEXANDER G. VICAS, B.Com. McGill 1960. The lag of unrestricted imitation behind product innovation. *Princeton*.
- WILLIAM H. WALLACE, B.B.S. Mississippi 1955; M.B.A. 1956. The theory and application of regional income determination in the United States. *Illinois*.
- JOSEPH ZRINYI, B.A. Pius College, Hungary; M.A. Montreal. Entrepreneurial behavior in economic theory; an historical and analytical approach. *Georgetown*.

Economic History; Economic Development; National Economies

Degrees Conferred

- NASSAU A. ADAMS, Ph.D. Harvard 1962. Economic growth and the structure of foreign trade.
- ROBERT K. ARNOLD, Ph.D. California (Berkeley) 1961. Theoretical models for projecting the California economy.
- HARVEY AVERCH, Ph.D. North Carolina 1962. Some welfare criteria for underdeveloped areas.
- ELIEZER AYAL, Ph.D. Cornell 1961. Public policies in Thailand under the constitutional regime—a case study of an underdeveloped country.
- VIRBHAN G. BHATIA, Ph.D. Harvard 1962. Interregional allocation of investment in development programming.
- YONG SAM CHO, Ph.D. California (Los Angeles) 1961. Disguised unemployment in South Korean agriculture.
- GEORGE C. CONSTANTACOPOULOS, Ph.D. Columbia 1962. The problem of economic development of Greece in its postwar setting.
- MANORANJAN DUTTA, Ph.D. Pennsylvania 1962. Some econometrics of India's foreign sector.
- HAIDAR GHAI BEH, Ph.D. Columbia 1962. Syria's import capacity and economic development.
- MARVIN GOODSTEIN, Ph.D. Cornell 1961. Measurement and analysis of Philippine real product 1938, 1948, and 1956.
- DAVID F. HAWKINS, D.B.A. Harvard 1962. A study of management inertia within a rapidly changing environment.
- WILLIAM C. HOEKENDORF, Ph.D. Washington 1961. The secular trend of income velocity in Japan, 1879-1940.
- CLARK JOEL, Ph.D. Wisconsin 1961. Korea: a case study in inflation.
- TATSUO KATAGIRI, Ph.D. Colorado 1961. Economic development and internal capital flow.
- THOMAS K. KIM, Ph.D. Tulane 1961. The growth of per capita personal income of the southeastern region of the United States, 1941-1950.
- MUNIDASA C. KODIKARA, Ph.D. Stanford 1962. Primary production and economic development.

- CHRISTOPHER T. KURIEN, Ph.D. Stanford 1962. Factor market structure and technological characteristics of an underdeveloped country: an Indian case study.
- JAMES C. LA FORCE, Ph.D. California (Los Angeles) 1962. The development of the Spanish textile industry, 1750-1800.
- IVAN A. LAKOS, Ph.D. Harvard 1962. The effects of Brazil's foreign exchange policy on the value of her exports and on the flow of private foreign investment with respect to Brazil's economic development: 1946-1960.
- JOE WON LEE, D.B.A. Indiana 1962. The Nathan Economic Mission and Korean development.
- DAVID J. LOSCHKY, Ph.D. Harvard 1962. A model for the study of productivity growth.
- DAVY H. MCCALL, Ph.D. Harvard 1962. The effects of independence on the economy of Vietnam.
- PETER F. M. McLOUGHLIN, Ph.D. Texas 1962. The methodology of regionalizing and distributing African income: the Sudan.
- ABU N. M. MAHMOOD, Ph.D. Harvard 1962. Towards a theory of economic planning for rapid growth with decentralized decision-making (the case for India).
- MARKOS MAMALAKIS, Ph.D. California (Berkeley) 1962. Inflation and growth: an asset preference analysis with a case study of the Chilean inflation.
- PLACIDO L. MAPA, JR., Ph.D. Harvard 1962. Development financing in a developing economy.
- JOSEPH A. MARTELLARO, Ph.D. Notre Dame 1962. The effects of the post-war economic development program in Southern Italy 1950-1960.
- MAUNG M. MAUNG, Ph.D. Catholic 1962. The genesis of economic development in Burma: the plural society.
- DONALD C. MEAD, Ph.D. Yale 1962. Monetary analysis in an underdeveloped economy: a case study of three East African territories.
- MICHAEL MISCHAIKOW, Ph.D. Indiana 1961. Postwar variations in the position of German coal.
- CHARLES J. MONTRIE, Ph.D. Yale 1962. Internal and external balance in an open economy: the case of Belgium.
- WALLACE M. NELSON, Ph.D. Florida 1962. The economic development of Florida 1870-1930.
- MUHAMMAD A. RAHMAN, Ph.D. Harvard 1962. The logic of regional investment allocation (an aggregative study in the theory of development programming).
- M. A. RAHMAN, Ph.D. Mass. Inst. Technology 1962. Partition, integration, economic growth and inter-regional trade: a case study in the growth of interwing trade in Pakistan.
- ANN B. RASMUSSEN KINNEY, Ph.D. Columbia 1962. Investment in Manchurian manufacturing, mining, transportation and communications in 1931-1945.
- JIMMY R. RINEHART, Ph.D. Virginia 1962. Rate of return on municipal subsidies to industries.
- PETER SCHRAN, Ph.D. California (Berkeley) 1961. The structure of income in Communist China.
- SHANTI S. TANGRI, Ph.D. California (Berkeley) 1961. Patterns of investment, political stability and rates of growth: with special reference to India.
- JAN V. TUMLIR, Ph.D. Yale 1962. Budget and the balance of payments: West Germany, 1948-1959.
- ALBERT J. ROBINSON, Ph.D. Duke 1962. Some aspects of economic growth in Australia, 1946 to 1959.
- EDWARD F. YOUNG, Ph.D. Columbia 1962. Changes in real wages in the early stages of economic development.
- MARIO ZANARTU, Ph.D. Columbia 1962. Roman Catholic ethic and economic development.

Theses in Preparation

- ABDELLA ADDED, B.S. Faculdade de Est. Econ. DoL.C.J. 1955; M.S. Purdue 1959. A study of the relationships of prices and money supply in selected Latin American countries with special reference to Brazil. *Purdue*.
- ROBERT W. ADLER, B.S. Oregon 1959. An economic analysis of Development Bank operations. *Oregon*.
- JALEEL AHMAD, B.A. Aligarh 1948; M.A. 1950; B.L. 1952; M.A. Pittsburgh 1960. Energy policy in India. *Mass. Inst. Technology*.
- ABBAS ABDUL-KARIM ALNASRAWI, M.A. Harvard 1957. Financing economic development in Iraq. *Harvard*.
- KHALIL MOHAMMED HASAN AL-SHAMMA, B.A. American, Beirut 1957; M.A. 1959. Inflation in the economic development of Iraq, 1950-1960. *California (Berkeley)*.
- JENARO BAQUERO, B.A. Puerto Rico 1957. The magnitude and significance of foreign investments in the economic development of Puerto Rico. *Harvard*.
- RICHARD A. BILAS, B.A. Duke 1956. The economic development of Federation of Malaya, 1950-1960. *Virginia*.
- DONN W. BLOCK, B.S. Northwestern 1949; M.P.A. Harvard 1960. Effect of United States aid to Pakistan. *Harvard*.
- MILBURN E. BOLIN, B.A. Texas 1955; M.A. 1960. Capital markets in Latin American economic development. *Texas*.
- THOMAS W. BONSOR, B.S. Miami 1951; M.A. Fletcher School 1955. Political economy of the U.S. assistance for economic development: A contribution to the search for a more effective program. *Fletcher School*.
- HAROLD L. BRIDE, B.A. Notre Dame 1945; M.A. Oregon 1957. The expansion of money and credit, inflation and economic development with special reference to India and Pakistan. *Oregon*.
- MICHAEL P. J. BRUNO, B.A. Cambridge 1956; M.A. 1960. Interdependence resource use and structural change in Israel. *Stanford*.
- ABRAHAM C. BURNSTEIN, B.S. City (New York) 1932; M.A. New School 1960. The iron and steel industry in pre-revolutionary Russia. *New School*.
- RONALD K. CALGAARD, B.A. Luther 1959; M.A. Iowa 1961. Economic planning in under-developed countries. *Iowa*.
- ROBERT C. CAUTHORN, B.S. Georgia Inst. Technology 1949; M.P.A. Princeton 1951. Recent contributions to an improved theory of entrepreneurship. *Tulane*.
- DAVID C. E. CHEW, B.A. California (Berkeley) 1959. The competitive strength of the Malayan rubber industry. *Harvard*.
- JAE H. CHO, B.A. Lafayette 1958; M.A. Indiana 1960. Post-1945 land reforms and their consequences in South Korea. *Indiana*.
- SEIYONG CHO, B.A. Oregon 1958. Economic recovery of Japan. *Columbia*.
- ROBERT E. COLBERD, JR., B.A. William Jewell 1953; M.B.A. Cornell 1957; M.A. Illinois 1961. Brick manufacturing in Mid-America, 1830-1900. *Illinois*.
- RAYMOND G. CONATSER, B.A. Southern Methodist 1958. Land reform and economic development: Mexico 1930-1960. *Southern Methodist*.
- RICHARD T. COZ, B.A. Gonzaga, 1953; L.Ph. 1954; M.A. 1954; B.S.T. Santa Clara 1959. Human resources in economic development. *North Carolina*.
- T. HARVEY CRANK, B. A. George Washington 1953. Some implications of foreign licensing for economic development. *Virginia*.
- JAMES CUTT, M.A. Edinburgh 1960. A comparative study of the role of taxation in economic development. *Toronto*.
- JOSEPH CZAKO, Ph.D. Budapest 1936. Investment & growth of Hungarian national income between 1949-1959. *Columbia*.

- LASZLO CZIRIAK, B.A. Budapest 1939. Indexes of industrial production and their application to the study of Hungarian industrial development 1938-1958. *Columbia*.
- JOHN A. DADSON, B.S. McGill 1959. Land tenure and agricultural development in Ghana. *Harvard*.
- ALBERT L. DANIELSON, B.S. Clemson 1960. The role of education in promoting growth in underdeveloped countries. *Duke*.
- THOMAS R. DE GREGORI, B.A. New Mexico 1959; M.A. 1960. Nigeria: A study of economic development and cultural change in tropical Africa. *Texas*.
- T. J. O. DICK, B.A. Carleton 1957. Railway leaders in nineteenth century Canada. *Toronto*.
- RICHARD B. DUBOFF, B.A. Dartmouth 1955; M.S. Columbia 1959. Electrical energy and productive efficiency in American manufacturing, 1880-1930. *Pennsylvania*.
- JAMES H. DUKES, B.S. Georgia 1940; M.A. Emory 1953. Monetary and fiscal policies of Brazil 1953-1960. *Florida*.
- JOHN W. EILERT, B.A. Wheaton 1950; M.S. Northern Illinois 1958. The business corporation in Illinois, 1816-1872. *Illinois*.
- MAGDI M. EL-KAMMASEH, B.Com. Cairo 1952; Dipl. in Statis. 1956; M.P.H. North Carolina 1958. An analysis of the supply approach to economic development of underdeveloped countries. *Duke*.
- ALLEN H. FENICHEL, B.S. Pennsylvania 1957. Quantitative analysis of the growth and diffusion of steam power in the U.S. to 1920. *Pennsylvania*.
- JOSEPH VAN FENSTERMAKER, B.S. Kent 1958; M.A. 1959. Early American banking history. *Illinois*.
- DELBERT A. FITCHETT, B.A. Pomona 1958; M.A. Yale 1959. Defects in the Agrarian structure as obstacles to the economic development of Peru. *California (Berkeley)*.
- DAVID G. GREENE, B.S. Florida 1957; M.A. Florida 1958. Steel and economic development: capital output ratios in three Latin American steel plants. *Michigan State*.
- VIJAYA L. GULHATI, B.A. Bennington 1959. Econometric analysis of Indian savings. *Harvard*.
- EILA A. HANNI, B.A. Bryn Mawr 1958; M.A. Yale 1959. Inflation in postwar Finland. *Yale*.
- H. H. GEORGE HENRY, B.A. London 1956; M.A. Cornell 1960. Economic history of Basutoland. *Cornell*.
- VACLAV HOLESOVSKY, Dipl. Paris 1950; M.A. Columbia 1958. Living standards in Czechoslovakia after World War II. *Columbia*.
- ROBINSON G. HOLLISTER, JR., B.A. Amherst 1956. Manpower projections, educational planning and economic growth. *Stanford*.
- BARTELL C. JENSEN, B.S. Utah 1959. An empirical study of the post World War II Finnish economy. *Purdue*.
- CHARLES J. JORGENSEN, B.S. Illinois 1931. Transport improvement and economic growth in the West, 1840-1860. *Washington*.
- NAKE M. KAMRANY, B.S. California (Los Angeles) 1959; M.A. Southern California 1962. The First Five Year Plan of Afganistan (1956-1962): An Economic Evaluation. *Southern California*.
- WELLS H. KEDDIE, B.A. Stanford 1948. The perishable food processing industry of Iran. *Claremont*.
- ALLEN C. KELLEY, B.A. Stanford 1959. Long swings in residential and railroad capital formation in Australia: 1860-1930. *Stanford*.
- IVAN S. KOROPECKYJ, Ph.D. Free Ukrainian 1951; M.B.A. New York 1957. Economics of capital investments in Soviet Ukraine. *Columbia*.
- EUGENIO F. LARI, LL.B. Siena 1956. Space economics problems and underdeveloped countries. *Vanderbilt*.
- JULES N. LAROCQUE, B.A. Iowa 1959; M.A. 1961. The Alliance for Progress. *Iowa*.

- A. LERMER, B.A. Warsaw 1937; M.A. Toronto 1944. The role of government in Canadian economic development. The national policy—a case study. *McGill*.
- FRED D. LEVY, JR., B.S. Purdue 1959; M.A. Yale 1960. A case study of investment allocation in an underdeveloped country. *Yale*.
- DENNIS R. LEYDEN, B.S. Clemson 1959. Land reform: its role in economic development with special reference to Southern Italy. *Virginia*.
- ISAAH LITVAK, B. Comm. McGill 1957; M.S. Columbia 1959. Importing from state controlled economies. *Columbia*.
- EUGENE LOREN, B.A. Michigan 1960. Human resources in the political economic development of Nyasaland. *Princeton*.
- ROBERT E. LOVETT, B.A. Michigan 1948; M.B.A. New York 1950. Concepts of entrepreneurship in recent economic thought. *Southern California*.
- ANDREA MANESCHI, B.A. Oxford 1958; Dipl. in Econ. 1959. Linear programming approaches to economic development. *Johns Hopkins*.
- DOROTHY E. MANEY, B.A. Mount Holyoke 1958. Role of foreign trade in Polish industrial development. *Harvard*.
- GEORGE C. MANIATIS, B.A. Athens Grad. School Econ. & Bus. 1952; B.A. 1956; M.A. California (Berkeley) 1958. The public enterprises in Italy: The problem of accountability. *California (Berkeley)*.
- ALBERTO MARTINEZ-PIEDRA, B.A. Belen; LL.D. Havana. Land reform in Cuba 1933-1958. *Georgetown*.
- PHILLIP A. MAY, B.A. California (Los Angeles) 1957; M.A. 1959. The economics of export taxation in the underdeveloped economy. *California (Los Angeles)*.
- ALBERT H. MEDINA, B.A. Loyola 1946. Monetary problems of the Mexican Revolution, 1910-1960. *New York*.
- DEBORAH C. MILENKOVITCH, B.A. Radcliffe 1958. Market structure and pricing in Yugoslavia. *Columbia*.
- HAROLD MOODY, B.S. California (Los Angeles) 1959; M.B.A. 1960. Theory and application of regional income and product accounts. *California (Los Angeles)*.
- JOSEPH P. MOONEY, B.A. LaSalle 1949; M.A. Pennsylvania 1953. Capital formation in El Salvador. *Pennsylvania*.
- ROBERT T. NEWSOM, B.A. Texas 1959. Income and the industrial structure of Texas counties, 1940-1960. *Tulane*.
- HONG-LAN OEI, B.A. Indonesia 1958; M.A. Kansas 1961. Petroleum in economic development: a comparative study of Indonesia and Mexico. *Texas*.
- ALAKNANDA PATEL, B.A. Calcutta; M.A. Banaras 1958. Exports in relation to economic development. *Harvard*.
- SVETOZAR PEJOVICH, [earlier degrees not supplied]. Comparative economic systems, a case of Yugoslavia. *Georgetown*.
- DAVID H. PENNY, B. Econ. Adelaide 1952; M.A. Stanford 1955. The economic motivation of farmers in low-income countries. *Cornell*.
- JUAN P. PEREZ-CASTILLO, B.S. Georgetown 1956; LL.B. Tulane 1959; M.A. Tulane 1960. Some aspects of Venezuela's economic development: 1945-1960. *Tulane*.
- DWIGHT H. PERKINS, B.A. Cornell 1956; M.A. Harvard 1961. The economics of finance of Communist China. *Harvard*.
- IBRAHIM I. PROY, Lic. Econ. Istanbul 1956. A model for the government sector (an input-output table) in Turkey and the appraisal of the role of this sector on the general development of the country. *California (Berkeley)*.
- BARRY M. RICHMAN, B.S. McGill 1958; M.S. Columbia 1959. The effectiveness of the annual operating plan of the Soviet industrial enterprise—in light of recent reforms. *Columbia*.
- JOHN B. ROSS, B.A. Dickinson 1960. The economic system of Mexico. *Duke*.

- MARY P. ROWE, B.A. Swarthmore 1957. Rural cooperatives in India. *Columbia*.
- WILLIAM F. RYAN, B.A. Montreal 1951; M.A. St. Louis 1953; STL. Theology College Louvain 1958. Economic development and the church in French Canada. *Harvard*.
- MOHAMED A. H. SAKR, B. Comm. Cairo 1956. Theory of economic integration and the less economically undeveloped countries. *Harvard*.
- JOHN SAMUEL, B.A. Trivandrum India 1957; M.A. Kerala 1958. Population control in India. *Toronto*.
- NATHAN E. SAVIN, B.A. California (Berkeley) 1956; M.S. (Statistics) 1960. Structural change in the British economy: 1860-1914. *California (Berkeley)*.
- BARNEY K. SCHWALBERG, B.S. Pennsylvania 1951. Population, labor force and productivity in the USSR, 1928-1960. *Harvard*.
- ROLAND K. SEVERIN, B.S. California 1950; M.A. Stanford 1958. Agricultural labor productivity in the Soviet Union. *Cornell*.
- ROBERT F. SEVERSON, JR., B.A. Illinois 1958; M.A. 1960. The Yugoslavian economy: A socialist model. *Illinois*.
- DONALD R. SHERK, B.A. Iowa 1958; M.A. Iowa 1960. Exchange and trade restrictions in underdeveloped countries—a theoretical analysis. *Iowa*.
- FRANKLIN B. SHERWOOD, B.A. Connecticut 1958; M.A. 1959. Problem of Guatemalan economic development. *Illinois*.
- BERTRAM SILVERMAN, B.A. Queens 1953; M.A. Illinois 1955. Foreign capital in Argentine economic development during the period of 1880-1914. *Columbia*.
- HADLEY E. SMITH, B.A. Eastern Nazarene 1951; M.A. Southern California 1954. The effects of economic planning on the private sector in India. *Southern California*.
- WAYNE W. SNYDER, B.A. Southern California 1949; M.P.A. Harvard 1960. Financial policy and economic development. *Harvard*.
- ERNEST STERN, B.A. Queens 1955; M.A. Fletcher School 1956. The economic development of Turkey: 1948-60. *Fletcher School*.
- HOWARD STERNBERGER, B.A. St. Lawrence 1956. The impact of foreign trade on Ceylon. *Columbia*.
- EDGAR A. STEWART, B.S. Cornell 1956; M.A. Columbia 1961. Developing a theory of optimum taxation for underdeveloped countries. *Columbia*.
- LAWRENCE STIFEL, B.A. Harvard 1952; M.B.A. Harvard 1954. Development of the textile industry in the Philippines. *Western Reserve*.
- SYLVESTER U. UGOH, B.A. New Hampshire 1959. Taxation as an instrument for resource mobilization in Nigeria. *Harvard*.
- EMMETT J. VAUGHAN, B.A. Creighton 1960. Capital accumulation in Nebraska since 1854. *Nebraska*.
- RAFAEL J. VILLANUEVA, B.A. Hunter 1958. National monopolistic practices and economic transformation in Argentina. *Columbia*.
- BERNARDO M. VILLEGAS, B.S. De La Salle 1958. Industrial priorities. *Harvard*.
- CARL R. WENDOLOSKI, B.A. Amherst 1957. The economy of Latin America. *Harvard*.
- WILLIAM M. WENDT, B.S. Miami 1954; M.S. American 1960. Domestic exchange rates, the capital market, and the decline of regionalism in the U.S. 1840-1860. *Purdue*.
- WILLIAM G. WHITNEY, B.A. Iowa 1959. The American tariff in historical perspective. *Harvard*.
- ALEXEJ WYNNYCZUK, Jur. D. Prague 1948; M.A. California 1958. International comparison of national income concepts. *Columbia*.

Statistical Methods; Econometrics; Social Accounting

Degrees Conferred

- JOHN D. BOSSONS, Ph.D. Harvard 1962. On the specification of the time structure of economic relationships.
- GEORGE C. TIAO, Ph.D. Wisconsin 1962. Bayesian assessment of statistical assumptions.

Theses in Preparation

- JOHN E. BRANDL, B.A. St. John's 1959. The development of econometric technique (the evolution of econometrics). *Harvard*.
- ANDREW GRINDLAY, B.S. Saskatchewan 1951; M.B.A. Western Ontario 1957. Tandem queueing systems with dynamic priorities. *California (Los Angeles)*.
- WILLIAM W. HARNED, B.A. Asbury 1938; M.B.A. Kentucky 1953. Interpretation and accounting theory. *California (Los Angeles)*.
- SAUL H. HYMAN, B.A. Harvard 1959. Econometric applications of economic theory. *California (Berkeley)*.
- ALFRED J. KANA, B.A. Columbia 1942; M.A. Columbia 1950. Statistical design of experiments in business. *Columbia*.
- FA CHUN SHEN, B.A. National Wu-Han 1944; M.A. California (Los Angeles) 1951. The construction of a cost of living index. *Illinois*.

Economic Systems; Planning and Reform; Cooperation*Degrees Conferred*

- DAVID W. MILLER, Ph.D. Columbia 1962. The utilization of partial information in quantitative decision-making.

Theses in Preparation

- ABDEL-RAZZAK ABDEL-MEGUID, B.Sc. Alexandria 1950; M.Comm. Birmingham 1952. Motivation and management in a planned society. *Texas*.
- PAUL W. THOMPSON, B.S. Louisiana 1959. The Marx-Soviet theory of the state. *Duke*.

Business Fluctuations*Degrees Conferred*

- THOMAS DYCKMAN, Ph.D. Michigan 1962. An investigation into the 1955 automobile sales year.
- EDWARD ETTIN, Ph.D. Michigan 1962. The causes of the 1957 downturn in the United States economy.
- EDWARD M. FOSTER, Ph.D. Mass. Inst. Technology 1961. Sales forecasts and the inventory cycle.

Theses in Preparation

- WILLIAM S. DAVIS, III, B.S. Lehigh 1952; B.A. 1952; M.S. Columbia 1959. Investor expectations. *Columbia*.
- DENNIS R. STARLEAF, B.A. California 1959; M.A. 1960. Business cycle of 1960-61. *Vanderbilt*.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit*Degrees Conferred*

- EUGENE A. BRADY, Ph.D. California (Berkeley) 1961. A study in mortgage credit and monetary policy.
- WILLARD T. CARLETON, Ph.D. Wisconsin 1962. Measurement of risk attitudes of Wisconsin banks.
- MOHAMMED U. CHAPRA, Ph.D. Minnesota 1961. Inflation and monetary policy in Pakistan, 1951-52 to 1959-60.

- ALLAN R. DREBIN, Ph.D. Michigan 1962. Commercial bank earnings and savings deposits.
- GARY H. DRIGGS, D.B.A. Indiana 1962. A pilot economic audit of a savings association.
- ROBERT V. BEGLY, Ph.D. Rutgers 1962. A study in the problem of constant value.
- GENE L. FINN, Ph.D. Wisconsin 1961. The availability of credit to Wisconsin small business.
- JOHN HEIN, Ph.D. Columbia 1962. Monetary policy and external surpluses.
- RAYMOND W. HOOKER, Ph.D. Wisconsin 1962. Attitudes of Wisconsin bankers towards small business financing.
- SALIM A. HOSS, Ph.D. Indiana 1961. The roles of central banking in Lebanon.
- GEORGE G. KAUFMAN, Ph.D. Iowa 1962. Response of selected commercial banks to Federal Reserve policy 1 January 1957 to 1 April 1959.
- FRANK W. KOLMIN, Ph.D. Syracuse 1962. Monetary policy in West Germany, 1948-1958.
- ALEXANDER J. KONDONASSIS, Ph.D. Indiana 1961. Monetary policies of the Bank of Greece, 1949-51: contributions to monetary stability and economic development.
- WILLIAM E. LAIRD, JR., Ph.D. Virginia 1962. The debt management controversy.
- VELY LE ROY, Ph.D. Michigan State 1961. Demand for money, income and employment.
- MICHAEL MANN, Ph.D. Cornell 1962. Consumer welfare and imperfect competition—a study of General Motors Acceptance Corporation.
- SIDDHESHWAR MITTRA, Ph.D. Florida 1962. Monetary policy in a developing economy: the Indian experiment.
- BRUCE H. OLSON, D.B.A. Indiana 1961. Time deposit building by commercial banks: a problem analysis.
- BRAXTON PATTERSON, Ph.D. Michigan State 1961. Studies in the operation of financial intermediaries.
- JOHN C. G. PERET, Ph.D. Harvard 1962. A study of some effects of changes in rates of interest on the share of interest income in national income.
- NORMAN E. WEIR, Ph.D. Southern California 1962. Consumer instalment credit as a variable in the quantity and velocity of money in California 1952-1960.
- JOHN H. WOOD, Ph.D. Purdue 1962. The term structure of interest rates: a theoretical and empirical study.

Theses in Preparation

- KAARLO P. AHTIALA, B.S. Helsinki 1956; M.S. 1958. The short-term adjustment mechanism on the bond market. *Harvard*.
- ROY C. ANDERSON, B.S. Lehigh 1953; M.A. Tulane 1959; Dipl. Stockholm 1960. Swedish monetary and fiscal policy, 1945-1959. *Tulane*.
- DALE A. BERRY, B.S. Illinois State Normal 1958; M.A. Indiana 1960. Federal Reserve discount policy and member bank borrowing 1956-61. *Indiana*.
- STANLEY M. BESEN, B.B.A. City (New York) 1958; M.A. Yale 1960. An empirical analysis of commercial bank lending behavior. *Yale*.
- DAVID A. BOWERS, B.B.A. Texas A & M 1956; M.A. Tulane 1959. The structure of interest rates as a measure of investor preference in the U.S. government securities market. *Southern Methodist*.
- WILLIAM C. BRAINARD, B.A. Oberlin 1957; M.A. Yale 1959. Financial intermediaries and a theory of monetary control. *Yale*.
- PHAM CHUNG, Lic. en Droit Saigon 1958; M.A. Pennsylvania 1960. The development of financial institutions and policies in Vietnam. *Pennsylvania*.
- JERRY H. CURNUTT, B.A. William Jewell 1959; M.S. Illinois, s.d. Types and uses of farmers' savings. *Illinois*.
- JOSE M. DAGNINO-PASTORE, Dr. Econ. Sci. La Plata 1954. Funds analysis for postwar Argentina. *Harvard*.

- VERNON J. DIXON, B.B.A. Manhattan 1954; M.S. Columbia 1955. Financial behavior of major sales finance companies, 1951-1962. *Fordham*.
- WAYNE DOBSON, B.A. Western Kentucky State 1958; M.A. 1960. Commercial bank portfolio management. *Kentucky*.
- HOLGER ENGBERG, M.Sc. Econ. Copenhagen 1955. Investment banking functions of commercial banks—a study of performance of mixed banking in continental Europe. *Columbia*.
- JAMES F. GALLACHER, B.A. Manhattan 1948; M.A. Fordham 1954. The Bank holding company in New York State, an explanation. *Fordham*.
- CHARLES A. GOODHART, B.A. Cambridge (England) 1960. The foundation of the Federal Reserve System. *Harvard*.
- JEAN M. GRAY, B.A. Michigan State 1949. The term structure of interest rates in the United States: 1884 to 1914. *California (Berkeley)*.
- STUART GREENBAUM, B.S. New York 1958; M.A. 1960. An empirical study of cost functions for commercial banks and their implications for the branch banking controversy. *Johns Hopkins*.
- JOHN E. GREENWOOD, B.S. Wisconsin 1956; M.A. 1957. Consumer installment credit in the U.S. and U.K.: a comparative study. *California (Berkeley)*.
- LEROY J. GROSSMAN, B.A. Washington 1951; B.S. 1954. The lag between changes in reserves and changes in bank credit. *Vanderbilt*.
- WALTER L. JOHNSON, B.A. Johns Hopkins 1959. The comparability of structure of interest rates. *Duke*.
- BERISLAV KARCIC, M.A. Columbia 1959. Role of money and monetary institutions in the Federated People's Republic of Yugoslavia 1947-1956. *Columbia*.
- HERBERT C. KAY, B.S. Pennsylvania 1959. Financial intermediaries and innovation: 1920-1930. *Stanford*.
- EUGENE W. LAMBERT, JR., B.S. B.A. Arkansas 1953; M.B.A. Texas 1957. An analysis of the effects of debt financing on investment value. *Alabama*.
- BONG SUH LEE, B.S. Pennsylvania 1959. Development of concept of money and central banking practice in theory of economic growth. *Harvard*.
- SAMUEL A. MARTIN, Cert. Manitoba Inst. of Chartered Accountants 1954; M.B.A. Harvard 1958. Determinants of saving deposit growth and distribution in the Hartford-New Britain metropolitan area 1957-61. *Harvard*.
- GEORGE S. MEDAWAR, B.A. Beirut 1955; Lebanon 1958. Monetary policy in Lebanon—a case study of monetary problems in a developing economy. *Cornell*.
- LARRY C. NELSON, B.A. Wittenberg 1959. The implications of corporate internal financing for monetary policy. *Tulane*.
- DANIEL OUNJIAN, B.A. Tufts 1957. Economic impact of recent developments in the financing of small corporations. *Harvard*.
- ANDREW PETRO, B.S. DePaul 1953; M.B.A. 1954. An econometric model of a monetary program. *Michigan*.
- SAMUEL H. PHILLIPS, B.A. William and Mary 1958. Institutional constraints on monetary policy: The Radcliffe Report's implication for United States monetary policy. *Virginia*.
- JAMES L. PIERCE, B.A. California 1959. Lags in monetary policy. (*California Berkeley*).
- JONAS PRAGER, B.A. Yeshiva 1959. The ineffectiveness of the new monetary theory. *Columbia*.
- GEORGE RONIGER, B.A. Queens 1957. Federal Reserve monetary policy in the recession of 1957-1958. *Columbia*.
- WILLIAM R. RUSSELL, B.S. Fresno State 1957; M.S. 1958. Bank portfolio adjustments: a Markov process analysis. *Washington*.
- DONALD P. STEGALL, B.S. Colorado 1954; M.S. 1959. The effects of capital requirements on the profitability of savings deposits in commercial banks. *Indiana*.

- S. J. STEPHENS, B.S. McGill 1955. Cheques cashed in clearing centres as a measurement of capital. *McGill*.
- RAYMOND S. STRANGWAYS, B.A. Vanderbilt 1955. The coordination between monetary policy and the credit policies of the federal government agencies: 1951-1960. *Tulane*.
- CHARLES B. STRAUT, B.A. Princeton 1949. Investment guarantees and the International Finance Corporation. *Princeton*.
- E. SUSSMAN, B.Comm. London 1953. M.Comm. McGill 1954. The role of mortgage banking in the Canadian economy. *McGill*.
- ALAN TECK, B.S. Cornell 1959; M.A. Columbia 1960. Application of standby controls over consumer installment credit. *Columbia*.
- RICHARD E. TOWEY, B.S. San Francisco 1954; M.A. California (Berkeley) 1957. Commercial bank time deposits and some of their implications for Federal Reserve Policy. *California (Berkeley)*.
- ALI WARDHANA, DRS Indonesia 1958. Monetary analysis and policy: with special reference to Indonesia. *California (Berkeley)*.
- DONALD Q. WEBB, B.A. Austin 1958. Economic development and the techniques of central banking: a comparative study of Costa Rica and Honduras. *Southern Methodist*.
- GERALD I. WEBER, B.A. California (Los Angeles) 1959. The demand for assets by commercial banks. *California (Los Angeles)*.

Public Finance; Fiscal Policy

Degrees Conferred

- LEONALL C. ANDERSEN, Ph.D. Minnesota 1962. A measurement and comparison of the incidence of monetary and fiscal measures on the structure of equilibrium output and price for selected industries.
- CHARLES H. BRADFORD, Ph.D. Harvard 1962. State aid for highways: development of an apportioning formula.
- ROBERT C. BURTON, Ph.D. Virginia 1962. The history of taxation in Virginia: 1870-1901.
- KENNETH E. DAANE, Ph.D. Colorado 1961. Economic analysis of the allocation of interstate income for state corporate income tax purposes.
- ROBERT L. DECKER, Ph.D. Colorado 1961. The economics of the legalized gambling industry in Nevada.
- ALFRED EDGAR, Ph.D. Toronto 1961. Major developments in public finance in British Columbia 1920 to 1960.
- OLIVER F. GUINN, Ph.D. Texas 1962. State government debt financing, 1946-1959.
- MARK A. HASKELL, Ph.D. Rutgers 1962. The influence of federal grants on state and local expenditures.
- WILFRED LEWIS, JR., Ph.D. Indiana 1962. Federal government fiscal policy in the postwar recessions.
- THOMAS G. MACBETH, Ph.D. Southern California 1962. An examination of elasticity as an econometric guide to fiscal policy.
- PAUL E. MERZ, Ph.D. Minnesota 1961. The income tax treatment of owner-occupied housing.
- THEODORE C. MESMER, Ph.D. Wisconsin 1962. Government expenditures and economic growth—an international comparative study.
- DANIEL C. MORGAN, JR., Ph.D. Wisconsin 1962. New bases for evaluating retail sales taxation.
- JAMES M. MURRAY, Ph.D. Oregon 1962. Income tax concessions and private foreign investments.
- JACK E. ROBERTSON, Ph.D. Tulane 1961. An empirical investigation of the ad valorem tax burden on owner-occupants of residential housing in Wichita, Kansas, 1958.

- RYUZO SATO, Ph.D. Johns Hopkins 1962. Fiscal policy and the theory of economic growth.
- JAMES SCHWINDEN, Ph.D. Minnesota 1962. Real property assessment—policy and practice in Minnesota.
- SOL SHOCKET, Ph.D. Southern California 1962. An economic analysis of the problems of federal debt management.
- MICHAEL D. TANZER, Ph.D. Harvard 1962. State and local government debt in the post-war period.
- ARAN THAMMANO, Ph.D. Oregon 1962. Public debt management and economic development in Thailand.
- DOUGLAS Y. THORSON, Ph.D. Wisconsin 1962. The selection of a tax unit versus the family unit.
- ELZIE G. WHITLOCK, Ph.D. Columbia 1962. Federal taxation of business income and estates.
- WILLIAM V. WILLIAMS, Ph.D. Colorado 1961. The measurement of the impact of state and local taxation on industrial location.
- FRANCIS O. WOODARD, Ph.D. Nebraska 1962. Effect of selected taxes on farmer home administration borrowers in Nebraska.

Theses in Preparation

- EARL W. ADAMS, B.A. Michigan 1959. Government expenditures equations in a quarterly econometric model for the United States. *Mass. Inst. Technology*.
- THOMAS R. BEARD, B.S. Louisiana State 1956; M.A. 1958. Countercyclical debt management. *Duke*.
- ROBERT W. BECKSTEAD, B.S. Utah 1955; M.B.A. 1956. Property tax delinquency in Illinois from 1928 to 1958. *Illinois*.
- WILLIAM C. BIRDSALL, B.A. St. Louis 1958. An analysis of voters' preferences on public finance amendments in the State of New York. *Johns Hopkins*.
- ROBERT E. BOLTON, B.A. Franklin and Marshall 1959. Regional impact of federal expenditures. *Harvard*.
- BENJAMIN BRIDGES, B.A. Duke 1958. Treatment of state and local nonbusiness taxes under the federal individual income tax: tax deductions and tax credits. *Johns Hopkins*.
- THOMAS W. CALMUS, B.A. Sacramento State 1957. Economics of public debt. *California (Berkeley)*.
- J. MARTIN CAROVANO, B.A. Pomona 1957. The financing of public higher education. *California (Berkeley)*.
- JAMES W. DUNLAP, B.S.B.A. Memphis State 1957; M.B.A. Arkansas 1958. The history, administration, and economic effects of the use tax: with special reference to Arkansas. *Arkansas*.
- NORBERT L. ENRICK, B.A. City (New York) 1941; M.S. Columbia 1945. Tax illusion with regard to U.S. federal income tax. *Virginia*.
- MORDECAI FEINBERG, B.A. Cincinnati 1956; M.A. Pennsylvania 1957. Implications of suburbanization for core-city revenue. *Columbia*.
- WILLIAM I. GILLESPIE, B.A. Western Ontario 1960. The effects of public expenditures on income distribution. *Johns Hopkins*.
- NILES M. HANSEN, B.A. Centre 1958; M.A. Indiana 1959. The structure and determinants of local public investment in East Flanders 1956-60. *Indiana*.
- ROBERT HARRIS, B.A., Columbia 1957; M.B.A. 1959. Expectations in fiscal policy theory. *Columbia*.
- CHARLES A. HEDGES, B.A. California 1953. Some problems in the financing of highways in the State of California. *California (Berkeley)*.
- RONALD HOFFMAN, B.S.B.A. 1956. A basis for the evaluation of the efficiency of state aid to local governments. *Johns Hopkins*.

- ROGER C. LAWRENCE, B.A. Columbia 1958. Debt servicing capacity. *Columbia*.
- ELLIOTT MORSS, B.A. Williams 1960. Economics applied to the problems of state taxation of interstate commerce. *Johns Hopkins*.
- HOWARD PACK, B.B.A. City (New York) 1959. Testing automatic fiscal rate changes as stabilization devices. *Mass. Inst. Technology*.
- CONSTANTINE G. PELEKODAS, B.S. Illinois 1957. An analysis of Illinois state retail sales tax collections. *Illinois*.
- KENNETH QUINDRY, B.S. Southern Illinois 1957; M.A. 1958. The adequacy of local general revenue in selected Kentucky counties. *Kentucky*.
- PEGGY RICHMAN, B.A. American 1959; M.A. 1960. Economic aspects of the taxation of foreign earned business income. *Johns Hopkins*.
- NORMAN L. WEED, B.S. Nebraska 1959. Decision-making in municipal capital expenditures. *Tulane*.
- JAMES WILDE, B.A. Wesleyan 1960. Public education: an exercise in fiscal federalism. *Princeton*.
- WALTON T. WILFORD, B.B.A. Southern Methodist 1958. Texas fiscal system: outlook for the next decade. *Southern Methodist*.

International Economics

Degrees Conferred

- ROBERT Z. ALIBER, Ph.D. Yale 1962. Speculation in the foreign exchanges: the European experience, 1919-1926.
- SHAFIQ AHMAD ALVI, Ph.D. Colorado 1961. Changes in exchange rates and their repercussions on Pakistan's external trade relations.
- CHARLES E. BARRETT, Ph.D. Maryland 1961. Imported inflation and the German experience, 1950-1960.
- NASER G. BODIYA, Ph.D. Michigan State 1961. An analysis of factors underlying the recent decline of American automobile exports to selected Latin American markets.
- ZDENEK CERNOHOUS, Ph.D. Minnesota 1961. Evaluation of the Bauer-Paish proposal for the reduction of fluctuations in the incomes of primary producers.
- RICHARD N. COOPER, Ph.D. Harvard 1962. American competition in world markets, 1953-1960.
- CARLOS F. DIAZ-A., Ph.D. Mass. Inst. Technology 1961. The experience of Argentina.
- ROBERT W. GILLESPIE, Ph.D. Mass. Inst. Technology 1961. Stimulation of economic growth with alternative balance of payments policies.
- BERNARD B. HANON, Columbia 1962. Impact of the European Economic Commission on the automobile industries of the member countries.
- GERALD K. HELLEINER, Ph.D. Yale 1962. Interconnections between United States and Canadian capital markets, 1952-1960.
- HANS E. JENSEN, Ph.D. Texas 1961. Foreign trade, institutional change, and economic development in Denmark.
- SHOU ENG KOO, Ph.D. Columbia 1961. Tariff and the development of cotton industry in China 1842-1937.
- RICHARD I. LEIGHTON, Ph.D. Duke 1961. A study of state trading with reference to butter trade.
- PETER J. LLOYD, Ph.D. Duke 1962. Small nation trading: a theoretical analysis.
- AHMAD A. MURAD, Ph.D. Wisconsin 1961. Egypt's economic relations with the Soviet bloc and the United States.
- DONALD K. PALMER, Ph.D. Harvard 1962. The influence of financial policy on the Greek foreign exchange position, 1956-60.

- METODEY POLASEK, Ph.D. Duke 1961. An analysis of the United States demand for raw apparel wool, with emphasis on import demand.
- FREDERIC L. PRYOR, Ph.D. Yale 1962. The foreign trade system of the European communist nations.
- WALTER S. SALANT, Ph.D. Harvard 1962. Import liberalization and employment.
- IRVING STONE, Ph.D. Columbia 1962. The composition and distribution of British investment in Latin America, 1865-1913.
- KENJI TAKEUCHI, Ph.D. Duke 1962. The "classical" theories of international trade and the expansion of foreign trade in Japan from 1859 to 1892.
- WILLIAM P. TRAVIS, Ph.D. Harvard 1962. On the theory of commercial policy.
- SNOH UNAKUL, Ph.D. Columbia 1962. International trade and economic development of Thailand.
- RICHARD A. WARD, Ph.D. Maryland 1962. U. S. monetary policy and the balance of payments, 1950-1960.
- MARINA VON NEUMAN WHITMAN, Ph.D. Columbia 1962. The encouragement of American private investment abroad through mixed public-private lending institutions.
- BILLY H. WILKINS, Ph.D. Texas 1962. Effects on the economy of Venezuela of actions by the international petroleum industry and United States regulating agencies.

Theses in Preparation

- SVEN ARNDT, B.A. Western Ontario 1958. The Canadian foreign exchange market. *California (Berkeley)*.
- HANG SHENG CHENG, B.A. Peiping 1948; M.A. George Washington 1953. A theory of the optimum amount of foreign monetary reserves. *Princeton*.
- RONALD J. CLARK, B.S. California 1957; M.B.A. Indiana 1958. Economic relations between the Soviet Union and Latin America since World War II. *Indiana*.
- BENJAMIN J. COHEN, B.A. Columbia 1959. Customs-unions and international liquidity. *Columbia*.
- MICHAEL DAKOLIAS, Degree Athens 1953. A model of international growth transmission. *Columbia*.
- A. L. DARTNELL, B. Comm. Sir George Williams 1958. Economic consequences of closer union between Canada and the West Indies. *McGill*.
- ANTAL DEUTSCH, B. Comm. Sir George Williams 1959. Economic policy of the Western allies in occupied Germany, 1945-48. *McGill*.
- ROBERT A. FLAMMANG, B.A. Nebraska 1956; M.A. Iowa 1959. The Latin American common market. *Iowa*.
- PETER W. FREVERT, B.A. Otterbein 1959; M.S. Purdue 1961. A suggested equilibrating mechanism for a foreign exchange market. *Purdue*.
- WILLIAM FURLONG, B.S. Alabama 1955; M.B.A. City (New York) 1959. Evaluation of techniques and problems of exchange accounting for foreign operations. *Alabama*.
- RONALD S. GRAYBEAL, B.A. Western Maryland 1957; M.A. Stanford 1959. An econometric model of the external trade of Hawaii. *Stanford*.
- HERBERT G. GRUBEL, B.A. Rutgers 1958; M.A. Yale 1959. The forward exchange markets and private short-term capital movements, July 1, 1955-August 1, 1961. *Yale*.
- ABDELAZIZ HAMZAOUTI, Dipl. Institut d'Etudes Politiques 1958; M.A. Fletcher School 1960. The economic integration of the Maghrib. *Fletcher School*.
- RICHARD HYSE, B.B.A. City (New York) 1958. Economic factors in the unification of sovereign states. *New York*.
- HUGO KAUFMANN, earlier degrees not supplied. History of Israeli government bonds; chapter in international finance. *Columbia*.
- ROBERT W. KNAPP, B.A. Detroit 1957; M.B.A. Michigan 1960. Some aspects of U. S. private investment in Canada, since 1945. *Michigan*.

- JOHN D. LAFKY, B.S. New Mexico A&M 1957; M.A. Texas 1960. Silver: national and international problems. *Texas*.
- RUTH A. MISKOVSKY, B.S. Illinois 1958; M.A. Cornell 1961. The transfer problem under changing conditions of comparative advantage: the United States experience, 1945-1962. *Cornell*.
- VICTOR MOK, B.A. Michigan State 1959; M.A. 1960. The foreign trade of communist China, 1949-1958. *Michigan State*.
- Dean W. MORSE, BA. Harvard 1941. The composition of international trade 1953-1958. *Columbia*.
- GORDON A. MURPHY, B.B.A. St. Bonaventure's 1950; M.A. George Washington 1959. Agricultural aspects of an economic integration of the United States and Canada. *Catholic*.
- ROBERT J. MURPHY, B.A. Boston 1948; M.A. 1951. Employment coefficients of output in escape clause industries. *Fordham*.
- PRABMAKER R. NARVEKAR, B. Comm. Bombay 1951. Japan's postwar balance of payments. *Columbia*.
- MARGARET M. REILLY, B.A. Immaculate Heart 1957; M.A. Fordham 1959. International monetary cooperation, 1956-1960. *Fordham*.
- RICHARD REIMER, B.A. Bethel 1957; M.A. Kansas State 1958. U.S. demand for imports of materials. *Michigan State*.
- JOHN W. ROWE, JR., B.S. Illinois 1958. Income versus price effects in international trade theory. *Illinois*.
- ANTHONY E. SCAPERLANDA, JR., B.S. St. Edward's 1959. The economic viability of the Latin American free trade association. *Texas*.
- ZOLTAN SEBESTYEN, Dipl. Budapest 1953; M.A. Columbia 1958. Role of capital movements in West Germany's balance of payments between 1948-1958. *Columbia*.
- GORDON L. SPANGLER, B.A. Tufts 1950; M.A. Fletcher School 1951. Farm parity and trade equality: a study of conflicts between U.S. farm and international trade policies. *Fletcher School*.
- FRANK G. STEINDL, B.A. DePaul 1957; M.A. Illinois 1958. The United States balance of payments, 1953-60. *Iowa*.
- ROGER B. UPSON, B.S. London 1960; M.B.A. Michigan 1961. U.S. direct investment abroad. *Michigan*.
- ARMAND M. J. VAN NIMMEN, Lic. Louvain 1959; M.I.A. Columbia 1960. The harmonization of fiscal policies in the European Common Market. *Columbia*.
- TED WALTHER, B.A. Mexico City 1955; M.A. New School 1958. Compatibility of stabilization programs and economic development in Latin America: recent experience in selected countries. *New School*.
- HELEN YOUNGELSON, B.A. City (New York) 1958. Structure of wages in foreign trade. *Columbia*.

Business Finance; Investment and Security Markets; Insurance

Degrees Conferred

- ELLIOTT L. ATAMIAN, D.B.A. Harvard 1962. Limiting risk in the administration of direct placement by life insurance companies head-quartered in New England.
- ALEXANDER BARGES, Ph.D. Northwestern 1962. The effect of capital structure on the cost of capital.
- WINFIELD S. BAUMAN, D.B.A. Indiana 1961. Investment experience with less popular stocks.
- RICHARD E. BENEDICK, Ph.D. Harvard 1962. Financing private industry in Iran.
- ERNEST BLOCH, Ph.D. New School 1962. Corporate liquidity preference.

- RICHARD S. BOWER, Ph.D. Cornell 1962. Investment behavior in a traditional industry: a case study of fixed asset expenditures in the clay construction products industry.
- ROBERT GOSHAY, Ph.D. Pennsylvania 1962. Corporate self insurance and risk retention programs for the fire, liability, and workmen's compensation risks.
- OTHA L. GRAY, Ph.D. Alabama 1961. An analysis of the factors which influenced the results of securities offerings by Georgia business firms which sought to obtain capital by sale of equity securities to the general public, 1957-1959.
- ROBERT W. GREENLEAF, D.B.A. Indiana 1961. Forces in the stock market, 1949-1959.
- J. RUSSELL NELSON, Ph.D. California (Los Angeles) 1961. The role of stock rights in corporate financial policy.
- ROBERT C. ORTNER, Ph.D. Columbia 1961. The factors which influence stock prices.
- HENRI C. PUSKER, D.B.A. Indiana 1962. Accounting and financial practices of agricultural cooperatives.
- ALEXANDER A. ROBICHEK, Ph.D. California (Berkeley) 1962. Financial management of life insurance companies.
- PETER E. SLOANE, Ph.D. Yale 1962. Determinants of bond yield differentials, 1954-1959.
- ROBERT DE W. TUCKER, Ph.D. California (Los Angeles) 1961. An evaluation of the Oklahoma Corporation Act.
- EMMETT WALLACE, Ph.D. Columbia 1961. Appraisal of stock options as an incentive device—a study of their use and abuse.
- FRASER G. WALLACE, Ph.D. California (Los Angeles) 1962. A computer simulation of selected hypotheses describing the investment behavior of a firm within a given economic environment.

Theses in Preparation

- NOEL C. BACCHUS, B.A. Grinnell 1958; M.A. Fletcher School 1959; M.A.L.D. 1960. Criteria, conditions and opportunities for capital investment in Sierra Leone. *Fletcher School*.
- ROBERT E. BOGGS, B.S.C. North Dakota 1953; M.B.A. Indiana 1955. The effect of accounting policy decisions on reported earnings per share. *Indiana*.
- JOHN C. BURTON, B.A. Haverford 1954; M.B.A. Columbia 1956. The management of corporate short-term funds. *Columbia*.
- JOHN E. CONDON, B.B.A. Western Michigan 1956; M.A. Michigan State 1957. Debt financing of large and medium-sized independent sales finance companies. *Harvard*.
- JAMES C. COOPER, B.A. Texas A&M 1956; M.A. 1958. Loan offer function for a commercial bank. *Illinois*.
- TIMOTHY G. DALTON, JR., B.A. Northwestern 1960. Optimal portfolio management. *Princeton*.
- PETER O. DIETZ, B.A. Dartmouth 1957; M.B.A. 1958; An evaluation of the investment performance of trustee pension funds. *Columbia*.
- ALAN D. ENTINE, B.A. Middlebury 1956; M.A. Columbia 1960. Liquidity preference of life insurance companies during a business cycle. *Columbia*.
- LEWIS P. FREITAS, B.A. Harvard 1957; M.B.A. Columbia 1959. Private placement and economic growth. *Columbia*.
- ALFRED J. GOBAR, B.A. Whittier 1953; M.A. 1955. Factors affecting the growth of small business investment companies on the Pacific Coast. *Southern California*.
- STUART HACKEL, B.S. California (Los Angeles) 1955; M.B.A. 1957. The credit insurance industry and its product—a critical appraisal. *California (Los Angeles)*.
- PAUL HARMON, B.A. Brigham Young 1944; M.A. 1948. The investment policies of the small business investment corporations. *California (Los Angeles)*.

- GERALD HARTMAN, B.S. Illinois Inst. Technology 1956; M.S. Iowa 1960. Commercial multiple line insurance. *Pennsylvania*.
- JAMES N. HOLTZ, B.A. Michigan 1953; M.B.A. 1955. Working capital theory as held by bankers, managers, and security analysts. *Michigan*.
- CHAIHO KIM, B.A. Ouachita Baptist 1958; M.S. Columbia 1959. Patterns of common stock issues during the post-war years. *Columbia*.
- EDWARD R. LEHMAN, B.S. New York State Teachers College, Albany 1954; M.B.A. New York 1957. Criteria for judging the adequacy of rate of return on capital investments. *New York*.
- JOHN H. MCARTHUR, B.Comm. British Columbia 1957; M.B.A. Harvard 1959. A study of debt financing basic economic risk, and debt capacity in the oil pipeline industry, 1940-1960. *Harvard*.
- ROBERT R. MCKENZIE, B.B.A. Minnesota 1955; M.B.A. California (Los Angeles) 1959. Corporate finance models. *California (Los Angeles)*.
- JOHN H. SMITH, B.S. Pennsylvania 1929. The impact of depreciation charges and other costs involved in leasing of capital equipment on the reported profits of the manufacturing lessor and its effect upon sales planning of the manufacturing lessor. *Pennsylvania*.
- RUSSELL A. SNYDER, B.A. Illinois 1952; M.A. Illinois 1961. Integration of social and private insurance in the United States, 1945-60. *Illinois*.
- RUSSELL G. S. STANFORD, B.S. in B.A. Washington 1943; M.S. and B.A. 1947. An analysis of speculation in financial markets. *Southern California*.
- SAM WEINER, B.S. Illinois 1955. An analysis of investment decision from cross section and time series data. *Stanford*.
- SUI N. WONG, B.B.A. Manila 1954; B.A. Philippines 1955; M.B.A. California (Berkeley) 1958. A theoretical model of capital budgeting. *California (Berkeley)*.
- ALAN ZAKON, B.A. Harvard 1957; M.S. Mass. Inst. Technology 1959. Common stocks as long term investments in the 1960's. *California (Los Angeles)*.

Business Organization; Managerial Economics; Industrial Management; Marketing; Accounting

Degrees Conferred

- GORDON C. ARMOUR, Ph.D. California (Los Angeles) 1961. A heuristic algorithm and simulation approach to relative location of facilities.
- CLINTON A. BAKER, D.B.A. Indiana 1961. A study of the development and current status of wholesaling in selected Southeastern states with particular emphasis on the position of South Carolina.
- RICHARD F. BARTON, Ph.D. California (Berkeley) 1961. Business decision theory.
- EVERETT R. BOLLINGER, JR. D.B.A. Indiana 1962. Management information from accounting reports for liquefied petroleum marketers.
- STANLEY I. BUCHIN, D.B.A. Harvard 1962. The Harbus 2 simulation model a business firm.
- LEONARD R. BURGESS, Ph.D. Columbia 1961. Top executive pay package.
- NEIL C. CHURCHILL, Ph.D. Michigan 1962. Behavioral effects of an audit: an experimental study.
- ARNOLD C. COOPER, Ph.D. Harvard 1962. Practices and problems in the development of technically advanced products in small manufacturing companies.
- DARCY C. COYLE, D.B.A. Harvard 1962. Mechanization work measurement and manpower utilization.
- AUSTIN B. EZZELL, Ph.D. Ohio State 1961. Some economic impacts of selected types of legislation on food wholesaling and retailing.

- JAMES M. FREMGEN, D.B.A. Indiana 1961. Involuntary liquidation of inventories priced by LIFO.
- JAMES L. GIBSON, Ph.D. Kentucky 1962. Accounting and economics in decision making: a case study approach.
- RAYMOND M. HAAS, D.B.A. Indiana 1961. A model of the long-range new product planning function in business.
- ROBERT C. HARING, Ph.D. Indiana 1962. Marketing of mechanical household refrigerators 1946-1960.
- RICHARD I. HARTMAN, D.B.A. Indiana 1961. Managerial manpower planning in selected manufacturing firms.
- LEONARD W. HEIN, Ph.D. California (Los Angeles) 1962. The impact of the British Companies Acts upon the major areas of the practice of accountancy in the British Isles.
- ALAN W. HESTON, Ph.D. Yale 1962. Corporate cash and security holdings: an empirical study of cash, securities and other current accounts of large corporations.
- JAMES B. HOBBS, D.B.A. Indiana 1962. Organization for the development of managerial resources.
- ROBERT T. HOLMES, Ph.D. Iowa 1962. A quantitative analysis of the relationship between sales and advertising for a selected group of retail stores in Iowa and Missouri.
- LELAND L. HOWELL, Ph.D. California (Berkeley) 1962. Location and competitive behavior in retailing.
- JOHN G. HUTCHINSON, Ph.D. Michigan 1961. The measurement of production standards and the administration of systems of production standards: an analysis of selected firms in the automobile and auto parts industries.
- JOHN H. JAMES, D.B.A. Indiana 1961. An analysis of planning policy and techniques in twenty-five selected companies.
- ALLEN O. JOHNSON, Ph.D. Cornell 1962. Evaluation of milk merchandising practices in New York State grocery stores.
- JAMES G. KENDRICK, Ph.D. Ohio State 1962. Effects of packaging selected fruit and vegetables on efficiency of retail merchandising.
- ADRIAN J. KLASSEN, Ph.D. Michigan State 1961. A conceptual framework for the determination of optimum marketing mix.
- BERNARD J. LALONDE, Ph.D. Michigan State 1961. Differentials in supermarket drawing power and per capita sales by store complex and store size.
- ROBERT W. LITTLE, D.B.A. Indiana 1961. An analysis of selected current practices and trends in wholesaling in the United States.
- ROM J. MARKIN, D.B.A. Indiana 1962. An analysis of the supermarket and superette in the post World War II period: a study of the contributing forces of development, growth and change.
- C. KENNEDY MAY, Ph.D. Columbia 1961. Planning the marketing program throughout the product life cycle.
- CHARLES S. MAYER DE BERNCASTLE, Ph.D. Michigan 1962. Managerial decision-making in field interviewing: a computer simulation model.
- JAMES F. McRAITH, Ph.D. Columbia 1961. The marketing of rice in the republic of Korea: problems of an underdeveloped oriental country.
- R. WILLIAM MILLMAN, Ph.D. Florida 1962. A general systems approach to the analysis of managerial functions.
- ROBERT G. MURDICK, Ph.D. Florida 1962. Product planning—strategy of competitive enterprise.
- LEO A. POLAND, D.B.A. Indiana 1962. Liberalized depreciation methods for tax purposes.
- EDWARD B. ROBERTS, Ph.D. Mass. Inst. Technology 1962. The dynamics of research and development.

- WILLIAM K. SAIGH, Ph.D. Saint Louis 1962. The voluntary and cooperative groups in the food distribution industry in St. Louis and the maintenance of their market share.
- CHARLES H. SAVAGE, JR., D.B.A. Harvard 1962. Study of a factory in the Andes.
- MARTIN SEIDEN, Ph.D. Columbia 1962. A quantitative and qualitative analysis.
- STERLING D. SESSIONS, D.B.A. Harvard 1962. The development of markdown decision rules for fashion goods.
- GEORGE B. SIMMONS, D.B.A. Indiana 1961. A theoretical framework for the evaluation of market potential in under-developed countries.
- LANGFORD W. SMITH, JR., Ph.D. Stanford 1962. An approach to costing joint production based on mathematical programming: with an example from petroleum refining.
- HORACE H. SQUIRE, Ph.D. Mass. Inst. Technology 1962. An investigation of the present status and effectiveness of management.
- LOUIS L. STERN, Ph.D. Northwestern 1962. The marketing of butter.
- RUSSELL A. TAUSSIG, Ph.D. California (Berkeley) 1962. Operational accounting for replacement models.
- E. KIRBY WARREN, Ph.D. Columbia 1961. Long-range planning in the decentralized corporation.
- WILLIAM J. WASMUTH, D.B.A. Indiana 1961. A case study approach to the study of deferred retirement programs in seven selected manufacturing plants.
- ROBERT J. WILLIAMS, Ph.D. Cornell 1962. An economic comparison of alternative marketing systems for servicing New York egg markets, 1961.
- MICHAEL Y. YOSHINO, Ph.D. Stanford 1962. Managing selected marketing functions in international operations.
- STEPHAN A. ZEFF, Ph.D. Michigan 1962. A critical examination of the orientation postulate in accounting, with particular attention to its historical development.

Theses in Preparation

- ALBERT L. ARCUS, B.Eng. Western Australia 1945; B.A. Oxford, England 1948; M.A. 1952. A computer method of sequencing operations for assembly lines. *California (Berkeley)*.
- NORMAN A. BERG, B.S. Case 1953; M.B.A. Harvard 1958. A detailed study of some aspects of long-range planning by a large company in the electronics industry. *Harvard*.
- S. T. BOGUSZEWSKI, B.Ec. London 1944. Business decision-making and economic growth. *McGill*.
- DONALD H. BRENNKECKE, B.S. Illinois 1948; M.S. Washington 1960; M.B.A. Indiana 1960. Simulation of assembly line systems as a means of evaluating line balancing procedures in terms of optimal total costs. *Indiana*.
- WILLIAM J. BRUNS, JR., B.A. Redlands 1957; M.B.A. Harvard 1959. An investigation of the effects of alternative methods of inventory valuation on simulated business decisions. *California (Berkeley)*.
- ROBERT L. BRYSON, JR., B.A. Oklahoma 1955; M.A. 1956; M.B.A. Indiana 1960. The evolution of private brand marketers in the petroleum industry. *Indiana*.
- WILLIAM F. CHAPMAN, JR., B.S. Clemson 1957; M.S. 1958. Competitive relationships in marketing Florida and California oranges. *Florida*.
- GEORGE N. CHRISTIE, B.B.A. Miami 1948; M.B.A. New York 1956. Productivity analysis for managerial planning and control. *New York*.
- RODERICK W. CLARKE, B.S. Purdue 1949; M.B.A. Air Force Inst. Technology 1958. Activity time-cost relationships for development projects. *Stanford*.
- ROBERT H. DEMING, B.S. Colorado 1956; M.S. 1959. Postulates of planning and control—A study of the characteristics that distinguish between effective and ineffective planning and control systems. *Harvard*.

- DOUGLAS M. EGAN, B.S. California (Berkeley) 1956; M.B.A. 1957. Industrial purchasing: a study in the simulation of industrial buying decisions. *California (Berkeley)*.
- ORLANDO FIGUEIREDO, B. Soc. Sci. Escola de Sociologia e Politica 1952; M.A. Michigan State 1957. Marketing management in a developing economy: a Brazilian case study. *Stanford*.
- ROBERT E. HANSEN, B.B.A. Toledo 1957; M.B.A. Indiana 1958. The use of the joint venture as a form for conducting business activity in the United States. *Indiana*.
- ROBERT T. HOLLAND, B.S. Marietta 1948; M.A. West Virginia 1952. Economic factors influencing migration of manufacturing firms. *Southern California*.
- KHATEEB M. HUSSAIN, B.Sc. Aligarh Muslim 1945. Program in planning for development-formulation of objectives and constraints. *California (Berkeley)*.
- GEORGE K. HUTCHINSON, B.S. Maine 1955; M.S. Carnegie Inst. Technology 1956. Design and simulation of a management information and control system. *Stanford*.
- HOWARD KUNREUTHER, B.A. Bates 1959. Extensions of a new theory on managerial decision making. *Mass. Inst. Technology*.
- ALAN H. LEADER, B.S. Rochester 1952; M.S. 1960. Patterns in judgment decision-making. *Indiana*.
- CHEN-TUAN LI, B.A. National Chengchi 1947; M.S.A. Florida 1959. Input interactions in Florida orange production. *Florida*.
- JOSEPH J. MASTER, B.S.B.A. Rollins 1949; M.A. Stetson 1958. Auditing management—a tentative concept. *Florida*.
- CHARLES R. MILLER, B.S. U.S. Naval Academy 1945; M.B.A. California (Los Angeles) 1957. Patterns of growth in industries and companies. *California (Los Angeles)*.
- MALCOLM L. MORRIS, B.B.A. Oklahoma 1952; M.B.A. 1959. An analysis of current trends and prospects of automatic merchandising. *Indiana*.
- REED MOYER, B.S. Harvard 1946; M.A. Wisconsin 1947. Competition in the Midwest bituminous coal industry. *California (Berkeley)*.
- LEE C. NEHRT, B.S. U. S. Coast Guard Academy 1949; M.S. Columbia 1956. Selling nuclear power plants overseas. *Columbia*.
- ROBERT M. OLSEN, B.A. Pomona 1952; M.B.A. Stanford 1956. An activity analysis of branched selling organizations. *California (Berkeley)*.
- LOCKWOOD RIANHARD, JR., B.Chem.Eng. Yale 1953; M.S. Mass. Inst. Technology 1954; M.B.A. Harvard 1958. Topics in control of production and inventories. *Harvard*.
- ROBERT RIDER, B.A. LaSalle 1957; M.A. Connecticut 1959. Location study of the electrical machinery industry field. *Pittsburgh*.
- N. EDWARD SANFORD, B.C.S. Santa Clara 1954; M.A. Claremont 1960. Sales behavior and revenue control. *Claremont*.
- CAROL H. SCHWARTZ, B.A. New York 1959. Retail trade development in New York State, 1800-1900. *Columbia*.
- KENNETH SIMMONDS, B.Comm. New Zealand 1956; M.Comm. 1960. Variable unit economics—a management study of product action and production information. *Harvard*.
- MELVIN J. STECKLER, B.S. Washington 1949; M.B.A. 1957. A case study of several factors influencing the growth of a business organization. *Harvard*.
- BRUCE B. STEINMANN, M.E. Stevens Inst. of Technology 1952; M.B.A. Pennsylvania. Economic implications of automatic manufacturing processes. *Columbia*.
- ROGER K. SUMMIT, B.A. Stanford 1952; M.B.A. 1957. Simulation of a decision process in a model of the aero-space industry. *Stanford*.
- JIM J. TOZZI, B.S.C.E. Carnegie Inst. of Technology 1960; M.R. Pittsburgh 1961. An application of linear economic models to marketing. *Florida*.
- SAMSON TUCHMAN, B.A. Brooklyn 1955; M.A. New York 1957. The economics of the waste paper industry. *New York*.

- ZBYNEK L. VANCURA, B.A. Netherlands School of Economics 1951; M.A. 1954. Management of liquid funds—a dynamic analysis under economic uncertainty. *Harvard*.
- LAWRENCE WEBSTER, B.A. Wisconsin 1936; M.S. Columbia 1947. Relevant costs for management decisions. *Columbia*.
- ARTHUR L. WELSH, B.S.C. Ohio 1958; M.A. 1960. Du-Pont-General Motors anti-trust case. *Illinois*.
- J. WILHELM ROSS, B.B.A. Western Reserve 1947; M.B.A. 1948. A psychological economic model advertising sales effort. *Michigan*.

Industrial Organization; Government and Business; Industry Studies

Degrees Conferred

- RICHARD B. BALTZ, Ph.D. Arkansas 1962. The cost-output analysis of independent telephone companies in Arkansas.
- MCDONALD P. BENJAMIN, Ph.D. California (Los Angeles) 1961. California's fruit and vegetable canning industry: an economic study.
- ROBERT T. BROWN, Ph.D. Harvard 1962. Programming investments in transport: the Chilean experience.
- ALVIN J. BYTWORK, Ph.D. Michigan State 1961. The effectiveness of alternatives to purchase in the marketing of construction equipment through distributors.
- ARTHUR L. COBB, D.B.A. Indiana 1961. The concept of the market in antitrust cases: a study in applied economics.
- JOHN J. COYLE, JR., D.B.A. Indiana 1962. An analysis of the rule of rate making.
- ERNEST M. DECICCO, Ph.D. Boston 1962. Wages, costs, and prices in the basic steel industry, 1947-49, 1957.
- JOHN S. DE LEEUW, Ph.D. Oklahoma 1962. Fair trade developments: 1951-1961.
- R. GORDON DIPPET, Ph.D. Columbia 1962. Airline financing: the development of financial policy in a burgeoning industry.
- MARIE E. DUBKE, Ph.D. Michigan State 1961. Certain aspects of the extent, means, and results of expansion in selected publicly owned firms.
- JOHN S. DYDO, Ph.D. California (Berkeley) 1962. Inter-industry mergers, 1946-1954.
- HAROLD E. FEARON, Ph.D. Michigan State 1961. Purchasing Research in American business.
- ALBERT A. FITZPATRICK, Ph.D. Southern California 1961. A comparative analysis of the pricing methods of selected manufacturing industries.
- IRVIN M. GROSSACK, Ph.D. Columbia 1962. The full structure of monopoly power.
- DONALD GRUNEWALD, D.B.A. Harvard 1962. The entrepreneur and the Federal Communications Commission: a study of comparative television licensing.
- FRANK L. HENDRIX, Ph.D. North Carolina 1962. A study of monopoly power in the newsprint industry.
- KENNETH J. HOLCOMB, Ph.D. Arkansas 1962. An analysis of problems involved in piggy-back service offered railroads with particular reference to the economic significance of the service.
- GEORGE R. HORTON, Ph.D. Virginia 1962. Railroad unification.
- CURTIS H. JONES, D.B.A. Harvard 1962. Mechanization and production fluctuations in manufacturing firms.
- CHARLES A. KELLY, D.B.A. Pittsburgh 1962. Analysis of small shipment transportation in the United States, 1946-1959.
- ROBERT G. KOKAT, D.B.A. Indiana 1962. Some economic implications of disarmament on the structure of American industry.
- JOHN L. MCKEEVER, Ph.D. Michigan State 1961. An investigation of the allocation of state highway construction expenditures in ten states and recommendations of a system of financial planning and control for such expenditures.

- CHARLES N. MOORE, Ph.D. Michigan 1962. Productivity and efficiency in the automotive trade.
- CHARLES T. MOORE, D.B.A. Indiana 1961. The economic implications of proposed highway by-passes in Nevada.
- JAMES T. MURPHY, Ph.D. Iowa 1962. Investment in the farm implement industry.
- MORTON K. OHLSON, Ph.D. Colorado 1961. Economics of a self-policing industry.
- PHILIP C. PACKARD, Ph.D. California (Berkeley) 1962. The newsprint industry: a study in bilateral oligopoly.
- SAMUEL R. REID, Ph.D. Saint Louis 1962. Corporate mergers and acquisitions involving firms in Missouri: some economic results and administrative policies and procedures.
- WARREN ROSE, Ph.D. North Carolina 1962. The development and profitability of air coach service.
- ROLLIE TILLMAN, JR., Ph.D. Harvard 1962. Organized product marketing research in the broadwoven consumer textile industry.
- GEORGE WEINER, Ph.D. Mass. Inst. Technology 1962. Trailer-on-flatcar transportation by the Interstate Commerce Commission.
- CLINTON H. WHITEHURST, JR., Ph.D. Virginia 1962. The case for competition in American ocean shipping: a critique of government subsidy policy, 1936-1959.

Theses in Preparation

- PETER ASCH, B.A. Oberlin 1959. Industrial structure and market behavior. *Princeton*.
- LYNN M. BARTTER, B.S.A. Cornell 1947; M.S. 1960. Market structures and organization in the Concord grape industry. *Cornell*.
- CHARLES P. BLITCH, B.S. Ed. Georgia Southern 1948; M.Ed. Emory 1954. Economic effects of price discrimination in the transparent packaging industry. *North Carolina*.
- BERNARD BOGAR, B.S. Ohio 1958; M.A. Indiana 1960. Mergers for diversification and the amended Clayton Act. *Indiana*.
- GEORGE M. BRINTON, B.B.A. Wisconsin 1949; M.B.A. Wisconsin 1950. The Economic feasibility of nuclear power plants in the Euratom countries. *Claremont*.
- VERNON M. BUEHLER, B.S. Utah State Agric. 1941; M.B.A. Harvard 1948. Profit criteria and reasonableness in government contracts. *George Washington*.
- DONALD C. CELL, B.A. Illinois 1954. Government expenditure in air transportation. *Columbia*.
- WILLIAM S. COMANOR, B.A. Haverford 1959. Research and development in the ethical drug industry. *Harvard*.
- GERALD ELIOT, B.A. Arizona 1952; M.A. 1953. Analysis of small manufacturers pricing policies in Southern California. *Southern California*.
- BOYD L. FJELSTED, B.S. Utah 1956; M.A. California (Berkeley) 1962. Competition in the gypsum products industry. *California (Berkeley)*.
- OLIVER GALBRAITH, B.S. Northwestern 1949; M.B.A. 1951. Long-range planning for harbor development. *California (Los Angeles)*.
- MARTIN A. GARRETT, JR. B.S. Middle Tennessee State 1955. Manufacturing changes in the South, 1947-1958. *Vanderbilt*.
- PAUL GAWTHROP, B.A. Marietta 1946; M.A. Columbia 1948. Dairy products industry in the U.S. 1930's to 1956. *Columbia*.
- JAY GOLDFARB, B.S. Rhode Island School of Design 1951; M.B.A. Pennsylvania 1958. The application of Bayesian decision theory to research and development decisions. *Pennsylvania*.
- PAUL T. GREEN, B.A. Carleton 1958; M.A. Columbia 1961. Some case studies of patent policies of selected large firms. *Columbia*.
- FRANK GREENWOOD, B.A. Bucknell 1950; M.B.A. Southern California 1959. The conditions of influence of long range planning staffs in business. *California (Los Angeles)*.

- WILLIAM H. HANNUM, B.A. Wooster 1954; M.B.A. Michigan 1959. An approach to the problem of analyzing the size distribution of an industry. *Michigan*.
- MICHAEL HARE, B.Comm. Toronto 1955. Growth and productivity of Canadian manufacturing industry. *Mass. Inst. Technology*.
- ROBERT H. HAVEMAN, B.A. Calvin 1958. The postwar federal rivers and harbors program and its impact on southern economic development—an economic evaluation. *Vanderbilt*.
- THOMAS H. HIBBARD, B.A. Pomona 1959. An economic analysis of the Los Angeles area newspaper market. *Claremont*.
- CARROLL E. HINSHAW, B.B.A. Baylor 1958. Cost benefit analysis and the operation of federal hospitals. *Vanderbilt*.
- RALPH H. HOFMEISTER, B.S. Northwestern 1954. Optimal investment configurations in electrical supply. *Mass. Inst. Technology*.
- SAMUEL HOLLANDER, B.Sc. London School Economics 1959. Technical change and efficiency: an empirical investigation of rayon manufacturing plants. *Princeton*.
- MARY A. HOLMAN, B.A. George Washington 1955; M.A. 1957. The utilization of government-owned patented inventions in the U.S. *George Washington*.
- MICHAEL INTRILIGATOR, B.S. Mass. Inst. Technology 1959; M.A. Yale 1960. An econometric study of the advantages of conversion from gasoline to Diesel engines in passenger automobiles. *Mass. Inst. Technology*.
- SANDERS A. KAHN, B.B.A. City (New York) 1947; M.B.A. New York 1949. The effect of public vehicular facilities upon neighboring property. *New York*.
- ROBERT L. KARG, B.S. Ohio 1954; M.A. 1955. A theory of crude oil prices: A study of vertical integration and percentage depletion allowance. *Pittsburgh*.
- JOHN F. KILLEEN, B.A. and M.A. Gonzaga; The National Coal Policy Conference; an approach to the functional economy. *Georgetown*.
- ROBERT L. LAVOIE, B.S. Boston 1948; M.B.A. Harvard 1950. Control problems in housing construction. *Harvard*.
- WILLIAM E. MAHER, B.B.A. City (New York) 1959. An evaluation of the secondary effects of New York State rent control, 1950-1960. *Tulane*.
- ROBERT K. MAIN, B.A. Kentucky 1956; M.A. 1962. Identification and measurement of the demand for highway-user services. *Kentucky*.
- PHILIP R. McDONALD, B.A. British Columbia 1956; M.B.A. 1960. A study of factors influencing fuel oil growth. *Harvard*.
- GEORGE MILLER, B.A. Los Angeles State 1958. Economics of spectator sports with special reference to Southern California. *Claremont*.
- WARREN A. PILLSBURY, B.A. New Hampshire 1953; M.S. Florida State 1958. The economic considerations in alternate highway location decisions. *Virginia*.
- ABNER SACHS, B.S. 1938; M.S. Pittsburgh 1953. Economic comparison of Diesel vs. electric motive power on railroads. *Pittsburgh*.
- ALFRED SCHOENNAUER, B.A. Washington 1949; M.B.A. 1959. A statistical analysis of airline passenger flow determinants. *California (Los Angeles)*.
- ANITA SCHWARTZ, B.A. Brooklyn 1941; M.A. Columbia 1946. An investigation of demand functions for the steel industry. *Columbia*.
- ELBERT W. SEGELHORST, B.A. Harris Teachers 1954. Fare structures of commuter railroads. *Columbia*.
- EUGENE M. SINGER, B.A. Princeton 1956; L.L.B. Michigan 1958. The rise of conglomerate corporate mergers. *Princeton*.
- SHELDON W. STAHL, B.A. California (Los Angeles) 1958; M.A. 1960. The location impact and pricing policies of the Los Angeles International Airport. *California (Los Angeles)*.
- HAROLD K. STROM, B.A. Washington 1957; M.B.A. 1958. Some aspects of competition in the Atlantic air passenger market. *California (Los Angeles)*.

- FRED A. TARPLEY, JR., B.B.A. Baylor 1958. The economics of combined utility and transit operations. *Tulane*.
- CAO TOAN, Lic. in Law Saigon 1957. The motor vehicle industry: a study of investment. *Columbia*.
- ROBERT VILLANUEVA, B.A. Columbia 1949; M.S. 1959. The development of a mathematical model of the demand for natural gas in the consumer sector. *Pittsburgh*.
- HUGH D. WALKER, B.A. McGill 1959. The influence of research and uncertainty in the pricing of ethical pharmaceuticals. *Vanderbilt*.
- THADDEUS J. WHALEN, JR., B.S. Santa Clara 1958. The American liquor industry. *California (Berkeley)*.
- JOHN H. WILLIAMSON, B.Sc. London School of Economics 1958. Patent royalties. *Princeton*.
- FRANK J. WRIGHT, B.S. B.A. Duquesne 1947; M.B.A. Pennsylvania 1949. A critical study of the theory and practice of the determination of value of private transit companies transferred to public ownership—with an application to the Pittsburgh Railways Company. *Pittsburgh*.

Land Economics; Agricultural Economics; Economic Geography; Housing *Degrees Conferred*

- JED A. ADAMS, Ph.D. California 1962. Intermarket producer price relationships for fluid milk in California.
- JOHN R. ALLISON, Ph.D. California 1962. The economies associated with size of pear-producing firms.
- VICTOR F. AMANN, Ph.D. Minnesota 1962. An analysis of the role of management in Minnesota farm supply cooperatives.
- JOHN W. BIRCH, Ph.D. Johns Hopkins 1962. The changing location of the wood pulp industry in the United States and Canada, 1900-1956.
- ROBERT L. BLOMSTROM, Ph.D. Colorado 1961. The economies of the fur trade of the West 1800-1840.
- OSCAR R. BURT, Ph.D. California 1962. The economics of conjunctive use of ground and surface water.
- HAROLD R. DILBECK, Ph.D. California (Los Angeles) 1961. The structure of the mortgage market as a determinant of the stability of residential construction in several metropolitan areas, 1953-1959.
- DAVID G. EDENS, Ph.D. Virginia 1962. Economic aspects of economic domain.
- OLAN D. FORKER, Ph.D. California 1962. Short and long term adjustments in the dairy product manufacturing industry of California.
- JOHN P. HERZOG, Ph.D. California (Berkeley) 1962. Analysis of the dynamics of large-scale housebuilding.
- EVA B. HIRSCH, Ph.D. Columbia 1960. Income distribution in Turkish agriculture.
- JOHN A. JAMISON, Ph.D. California 1962. Economic implications of the changing structure and organization of the California fresh deciduous fruit industry.
- THOMAS A. JUDSON, Ph.D. Toronto 1961. The freshwater commercial fishing industry of Western Canada.
- JOHN F. KAIN, Ph.D. California (Berkeley) 1961. The journey to work as a determinant of residential location.
- NICOLAAS G. M. LUYKX, II, Ph.D. Cornell 1962. Some comparative aspects of rural public institutions in Thailand, the Philippines, and Viet-Nam.
- MALCOLM H. MACDONALD, Ph.D. Cornell 1961. A supply control program for the dairy industry.

- RENE P. MANES, Ph.D. Purdue 1961. The effects of U. S. oil import policy on the petroleum industry.
- BOBBY C. MCGOUGH, Ph.D. Florida 1962. A critical analysis of the impact of highway improvements on land values as measured by the expressway in Jacksonville and Manatee Avenue in Bradenton, Florida.
- RICHARD A. MILLER, Ph.D. Yale 1962. Exclusive dealing in the petroleum industry: the refiner-lessee-dealer relationship.
- OSCAR K. MOORE, Ph.D. Florida 1962. The Brazilian coffee economy.
- REED MOYER, Ph.D. California (Berkeley) 1962. Competition in the Midwest bituminous coal industry.
- ALDO L. OSTI, Ph.D. Cornell 1962. Interregional changes and forecasting equations applicable to the tomato canning industry.
- SURYA M. PATHAK, Ph.D. Cornell 1961. An economic analysis of agriculture in Western Uttar Pradesh (India) with special reference to Meerut and Muzaffarnagar districts.
- LAURA RANDALL, Ph.D. Columbia 1962. Effects of large supplies of agricultural labor on Mexican economic development, 1940 to date.
- ORLANDO DE JESUS SACAY, Ph.D. Cornell 1961. An analysis of the crop loan program of the agricultural credit and cooperative financing administration.
- DONALD I. SHAPIRO, Ph.D. Columbia 1961. An economic basis for real estate development.
- RICHARD A. SIEGEL, Ph.D. California (Los Angeles) 1961. Estimating interindustry employment effects of California residential construction.
- DALE G. STALLINGS, Ph.D. Minnesota 1962. An economic-engineering analysis of the methods and costs of packing plums.
- GEORGE STERNLIEB, Ph.D. Harvard 1962. The future of the downtown department store.
- THOMAS C. THOMAS, Ph.D. Mass. Inst. Technology 1962. Variations in copper usage in the United States.
- JOHN C. THOMPSON, JR., Ph.D. Cornell 1962. An analysis of apple storage costs in New York State.
- YORK W. WILLIAMS, Ph.D. Colorado 1961. An economic evaluation of the power program of the Tennessee Valley Authority.
- HENRY A. WADSWORTH, JR., Ph.D. Cornell 1962. An economic analysis of large dairy farms.
- HERBERT W. WARBURTON, Ph.D. Florida 1962. An economic evaluation of fluid milk supply, movement, utilization, and potential demand in Florida.
- FLORENDO F. ZABLAN, Ph.D. Cornell 1962. The economics of beef cattle production in the Philippines.

Theses in Preparation

- DENNIS J. AIGNER, B.S. California (Berkeley) 1959; M.A. 1962. The application of linear programming as a predictive device to estimate short and long term supply response of producers in the processed vegetable industry. *California (Berkeley)*.
- EDWARD H. BARKER, B.A. California (Los Angeles) 1937; M.S. Southern California 1945. An economic analysis of the Los Angeles metropolitan area with special emphasis on projected population and industry expansion. *Southern California*.
- PAUL W. BARKLEY, B.S. Oregon 1957; M.S. 1959. Economic effects of flood control reservoirs on farm adjustment. *Kansas*.
- GERALD E. BREGER, B.S. B.A. Florida 1952; M.A. Miami 1956. The economic effects of the urban renewal program in the metropolitan area of Little Rock, Arkansas. *Arkansas*.
- JOHN B. BRITNEY, B.S. Ontario Agricultural; M.S. Purdue. Time series analysis of variations in land values. *Purdue*.

- KAYE D. CAPSTICK, B.S.M. Detroit 1958; M.B.A. 1961. A critical review of housing market analysis. *Florida*.
- OMER L. CAREY, B.A. Illinois Wesleyan 1954; M.B.A. Indiana 1960. The application of economic criteria for government investment in national parks—the Dinosaur National Monument controversy. *Indiana*.
- VIRGIL E. CROWLEY, B.S. Missouri 1943; M.S. 1955. Adjustment needed to raise levels of farm income in the corn belt area. *Missouri*.
- ROBERT K. DAVIS, B.S. Ohio 1950; M.S. 1951; M.P.A. Harvard 1957. The economics of recreational development in the Maine woods. *Harvard*.
- LEOPOLDO P. DEGUZMAN, B.S. Philippines 1955; M.S. Florida 1957. An analysis of the potentials for increasing farm incomes in four villages in the Philippines. *Cornell*.
- HARLAN J. DIRKS, B.S. South Dakota State 1949; M.S. 1960. Study of the potential possibilities of extensive integration in hog production. *Minnesota*.
- FRED C. DOPSON, B.S. Missouri 1950, M.S. Kansas State 1962. Problems in assessment of real estate for taxation in rural-urban fringe areas. *Missouri*.
- JACK D. EDWARDS, B.A. Wichita 1954; M.S. Kansas State 1958. Economic impact of road and highway improvement on farm real estate values in Kansas. *Kansas State*.
- C. LYNN FIFE, B.S. Brigham Young; M.S. Oregon State. Information systems in dairy plants. *Purdue*.
- JOHN C. HAGGART, B.S. California (Los Angeles) 1951; M.B.A. 1961. A management theory approach to urban planning. *California (Los Angeles)*.
- ROBERT W. HARTMAN, B.A. Queens 1958. Structure of the housing market. *Harvard*.
- SUMNER J. HOISINGTON, JR., B.S. Northeastern 1959. Social rate of return of public investment in depressed areas. *Brown*.
- JAMES P. HOUCK, JR., B.S. Pennsylvania State 1957; M.S. 1959. An economic appraisal of the United States soybean industry. *Minnesota*.
- ROY M. HOVEY, B.S. North Dakota State 1948; M.S. 1958. Interstate highway land problems on abutting farms in Kansas. *Kansas State*.
- JOHN P. HRABOVSKY, B.Agr.Sc. Budapest 1946; M.S.A. Ontario Agricultural 1960. How farmers make decisions relative to the purchase of real estate. *Cornell*.
- ESTEL H. HUDSON, B.S. Missouri 1953; M.S. 1957. Methodological procedures for estimating county farm income. *Missouri*.
- CARROL L. KIRTLEY, B.S. Missouri 1958; M.S. 1960. Economies associated with density of agricultural production. *Missouri*.
- GEE-SUN LEE, B.S. Taiwan Provincial College of Agriculture 1957; M.S. 1960. An economic evaluation of alternative crop and livestock enterprises in Western Kansas. *Kansas State*.
- ROBERT L. LEONARD, B.S. North Carolina State 1959; M.S. California (Berkeley) 1961. Economic analysis of integrated management of ground and surface water. *California (Berkeley)*.
- SAMUEL H. LOGAN, B.S. Kansas State College 1956; M.S. Kansas State University 1959. An economic analysis of scale economies in beef slaughter plants. *California (Berkeley)*.
- DONALD S. LUCE, B.S. Vermont 1957; M.S. Cornell 1959. The function and organization of research in the agricultural development of Vietnam. *Cornell*.
- HARBANS S. MANN, B.S. Khalsa Amritsar 1936; M.A. Government Lahore 1938; M.A. Forman Christian Lahore 1941. Cooperative farming and family farming in the Punjab: a comparative study. *Ohio*.
- WILLIAM L. MANN, III, B.S. Cornell 1958; M.B.A. 1959. Empirical sampling distributions for relationship statistics in the area of farm management. *Cornell*.
- MASAO MATSUMOTO, B.A. California (Berkeley) 1958; M.S. 1960. Characteristics of demand for alternative size categories of frozen brussels sprouts. *California (Berkeley)*.

- GARY McDOWELL, B.A. Southeast Missouri State 1959. Swamp-East Missouri: case study in land development by local government. *Columbia*.
- VIRGIL A. METCALF, B.S.A. Arkansas 1958; M.S. 1960. An economic analysis of seed cotton storage. *Missouri*.
- YU HSUEN MO, B.S. Taiwan Provincial College of Agriculture 1955; M.S. Oregon State 1958. An econometric study of the California walnut industry. *California (Berkeley)*.
- JAMES B. MONTGOMERY, B.S.B.A. Miami 1958; M.B.A. Florida 1962. An economic study of a resort and retirement community. *Florida*.
- CARMEN O. NOHRE, B.S. Minnesota 1950; M.S. 1960. Optimal farm organizations of hog-beef farms in the Clarion-Nicollet-Webster soils area of Minnesota. *Minnesota*.
- SATISCHANDRA B. B. PAREKH, B.A. Bombay 1958; M.A. New York 1959. The problem of institutional credit for agriculture in India. *New York*.
- JIN HWAN PARK, B.S. Seoul National 1953; M.S. 1955; M.S. Minnesota 1957. The economics of resource use on farms in Korea. *Minnesota*.
- IDA A. PARKER, B.A. Cornell 1931; M.Pub.Adm. New York 1958. Short-run forecasting of receipts of milk from farmers in the New York-New Jersey milkshed. *Cornell*.
- GEORGE R. PESSAGNO, B.B.A. City (New York) 1954; M.A. 1959. Economics of the petroleum industry. *New York*.
- JOHN T. PORTER, B.S. Cornell; M.S. Michigan. The role of information in the management of tomato canning firms. *Purdue*.
- JAMES R. PRESCOTT, B.A. California (Berkeley) 1957. Economics of public housing. *Harvard*.
- ROBERT J. RADES, B.S. and M.S. Wisconsin. Use of linear programming in farm planning. *Purdue*.
- PERETZ RAM, M.A. Hebrew, Israel 1954. Productivity of resources used on Minnesota commercial farms. *Minnesota*.
- S. ANANDA RAO, B.S. Mysore 1955. Econometric evaluation of changes in land use, with special reference to the urban-rural margin. *California (Berkeley)*.
- RICHARD D. RAYMOND, B.A. Buffalo 1959. Interaction between discrimination, interregional migration, and regional economic development. *Brown*.
- LLOYD C. RIXE, B.S. Montana State 1957; M.S. 1960. Economics to size in Red River Valley farming. *Minnesota*.
- AZIZ A. F. SALEH, B.S. Ein Shams 1951; M.Sc. 1957. An economic study of the California cantaloup industry. *California (Berkeley)*.
- RADFORD L. SCHANTZ, B.E.E. Syracuse 1949; M.B.A. New York 1952. Natural gas field prices cannot be regulated by the public utility cost method. *New York*.
- MORRIS SILVER, B.A. Columbia 1958. Factors affecting tenure and employment arrangements in agriculture. *Columbia*.
- ROBERT W. SNYDER, B.S. Cornell 1953; M.S. 1961. Possibilities for utilization of obsolete farm lands. *Cornell*.
- CHARLES STUDNESS, B.A. Minnesota 1957; M.A. 1958. Historical instability of agriculture west of the 100th meridian. *Columbia*.
- FRANCIS X. TANNIAN, B.A. Boston College 1955; M.A. 1959. Suburban development and supplies of public facilities. *Virginia*.
- WILLIAM A. TINSLEY, B.S. Illinois 1956; M.S. 1960. An analysis of the use of corn silage in beef cattle rations. *Minnesota*.
- GLEN J. VOLLMAR, B.S. Ohio State 1954; M.S. 1960. Investigation concerning the methodology for the organization and measurement of an economic balance of power and machinery for Ohio cash grain farms. *Ohio State*.

Labor Economics*Degrees Conferred*

- LEROY E. BAKER, D.B.A. Harvard 1962. Accounting for pension costs: an historical survey.
- RALPH E. BALYEAT, Ph.D. Minnesota 1961. Perceptions of industrial relations policies and practices: a developmental project involving a pilot study in selected firms.
- WILLIAM H. COOPER, Ph.D. Pennsylvania 1962. The comparative administrative philosophies of Frederick W. Taylor and Elton Mayo.
- FRANK E. COTTON, JR., Ph.D. Pittsburgh 1962. Major changes in the Mississippi Labor Force, their causes and effects.
- GEORGE DELEHANTY, Ph.D. Mass. Inst. Technology 1962. An analysis of the changing proportion of non-production workers in the United States manufacturing industries.
- DEMETRIOS DERTOUZOS, Ph.D. Rutgers 1962. The Greek labor movement: its role in the national industrial relations system.
- EUGENE H. FOX, Ph.D. Alabama 1962. A study of the economic and social impact of automation upon management and personnel in business offices in Memphis, Tennessee.
- CLARA FRIEDMAN, Ph.D. Columbia 1962. An economic analysis of the origins and effects of the preparation pay differentials for New York City teachers.
- LLOYD L. GALLARDO, Ph.D. California (Berkeley) 1962. An evaluation of United States Department of Labor policy regarding wages paid Mexican nationals: Michigan pickles, a case study.
- EDWARD Y. GEORGE, Ph.D. New School 1962. Shortage of engineering manpower: a study of the concept of "shortage" in scientific and engineering manpower with special reference to chemical engineers.
- JAMES A. GROSS, Ph.D. Wisconsin 1962. The N.A.A.C.P., the AFL-CIO and the Negro worker.
- ERNEST HARVEY, Ph.D. Columbia 1962. Pension plans in Pennsylvania.
- ROBERT I. HISLOP, Ph.D. Colorado 1961. The United States and the Soviet Union in the International Labor Organization.
- HAROLD D. JANES, Ph.D. Alabama 1961. Labor-management consideration in the permanent shutdown or relocation of plants in large scale manufacturing industry.
- LE ROY JOHNSON, Ph.D. Wisconsin 1961. The relationship of work experience to orientation toward retirement.
- MAXIMILLIAN B. JONES, Ph.D. North Carolina 1962. Wage structure theory and its implications for job evaluation.
- JORN J. LOEWENBERG, D.B.A. Harvard 1962. Effects of change on employee relations in the telephone industry.
- JOHN J. MACKIN, Ph.D. Catholic 1962. The national labor policy and the Union shop: a legislative history.
- MARIA E. MEEHAN, Ph.D. New York 1962. Frank P. Walsh and the American labor movement.
- N. PATTABHI RAMAN, Ph.D. New School 1962. Political involvement of India's trade unions: a case study of the anatomy of political labor movement in South and South-East Asia.
- ABRAHAM J. SIEGEL, Ph.D. California (Berkeley) 1961. Strike and industrial relations experience in the steel industries of selected countries.
- LUIS F. SILVA, Ph.D. Wisconsin 1962. Public wage fixing and its effect on collective bargaining and the labor movement in Puerto Rico.
- KEITH SLOANE, Ph.D. Duke 1960. Wage-drift in Australia.
- DONALD R. SNODGRASS, Ph.D. Yale 1962. The varieties of wage decision making: an em-

pirical analysis of some aspects of general money wage level determination in American manufacturing, 1948-1959.

JOHN P. SUSKO, Ph.D. Notre Dame 1962. An analysis of the impact on prices of the escalator clause in collective bargaining agreements.

JUANITA D. TATE, Ph.D. New York 1962. Philip Murray as a labor leader.

TORRE TJERSLAND, Ph.D. Stanford 1961. Some aspects of employment facing the United States in the period 1960 through 1970.

C. GLYN WILLIAMS, Ph.D. Virginia 1962. Railroad Union policies in the postwar period.

MAX S. WORTMAN, JR., Ph.D. Minnesota 1962. Some influences of membership in employer bargaining associations upon manpower management functions in industrial organizations in a local labor market.

Theses in Preparation

JOHN W. ALLEN, B.S. Cornell 1953; M.S. 1958. Collective bargaining in the retail food industry. *Cornell*.

STUART H. ALTMAN, B.A. City (New York) 1959; M.A. California (Los Angeles) 1960. Unemployment in the secondary labor force. *California (Los Angeles)*.

MYRTLE M. ARMSTRONG, B.A. Toronto 1952; M.A. 1959. The structure of industrial relations in the public sector: the government of Ontario and its employees. *Toronto*.

SAM BARONE, B.S. Illinois 1958; M.S. 1959. The labor movement since 1945. *Illinois*.

JOHN C. BIXBY, B.S. California (Berkeley) 1951; M.B.A. Southern California 1958. The evolution of the labor injunction with emphasis on contemporaneous factors influencing its application. *Southern California*.

CHARLOTTE R. BOSCHAN, B.B.A. New York 1946; M.S. Columbia 1951. Labor turnover and changing economic conditions in the United States. *Columbia*.

PAUL D. BUSH, B.A. Denver. Marginalism and institutionalism in labor economics. *Claremont*.

JUDITH CHANIN, B.A. Columbia 1958; M.A. New York 1959. The impact of technology on an agricultural labor market: the Salinas Valley. *California (Los Angeles)*.

HERBERT A. CHESLER, B.A. New York 1957; M.A. Illinois 1958. Occupational retraining and labor market behavior: an empirical study of the economic determinants of the retraining decision. *Mass. Inst. Technology*.

ALTON W. CRAIG, B. Com. St. Dunstan's 1955; M.B.A. Western Ontario 1957. Impact of Canadian labor legislative structure on collective bargaining in Canada. *Cornell*.

DORIS M. DRURY, B.S.C. Louisville 1955; M.B.A. 1957; M.A. Indiana 1959. A review of the literature dealing with accidents in coal mines. *Indiana*.

MARY B. FITZPATRICK, B.A. Tufts 1945; M.A. Stanford 1950. Problems of long-run unemployment. *Harvard*.

WALTER A. FOGEL, B.S. North Dakota Agri. 1954; M.A. Minnesota 1957. Job rate changes and unit labor cost. *Mass. Inst. Technology*.

FRANK A. FRASER, JR., B.S.C. Georgia 1940; M.P.A. Harvard 1946. Labor-management relations at the Air Force missile test range from 1952 until 1960. *Florida*.

CECIL G. GOUKE, B.A. City (New York) 1956; M.A. 1958. The Amalgamated Clothing Workers Union, 1940-1960. *New York*.

JAMES M. HOWELL, B.A. Texas A & M 1956. A statistical study of the secondary effects of structural unemployment in the textile industry of Lawrence, Massachusetts. *Tulane*.

ROBERT S. JOHNSON, B.A. Stetson 1959. The employment service as government policy. *Virginia*.

HAROLD LAZARUS, B.A. New York 1949; M.S. Columbia 1952. Selected career patterns of disabled college graduates. *Columbia*.

HOSSEINE MOREWEDGE, B.A. Tehran 1942; M.A. Columbia 1958. The economics of casual labor (a study in longshore industry). *Columbia*.

- VICTOR V. MURRAY, B.A. Manitoba 1953; M.A. Minnesota 1957. The effects of power to influence an outcome controller on the choice of action path for attaining improved outcomes. *Cornell*.
- JACK W. NICKSON, B.B.A. Oklahoma 1958; M.B.A. Oklahoma 1959. An economic study of registered professional nurses in Oklahoma, and the applicability of the ANA Economic Security Program. *Oklahoma*.
- EDWARD D. ONANIAN, B.A. Brown 1958; M.A. Illinois 1961. An analysis of Title VII of the Labor-Management Reporting and Disclosure Act of 1959. *Illinois*.
- DAVE M. O'NEILL, B.A. City (New York) 1959. Occupational incidence of unemployment. *Columbia*.
- DAVID J. PARK, B.A. Claremont Men's 1957; M.A. Southern California 1959. Employment distribution and city size: a statistical analysis of the United States, 1890-1960. *Southern California*.
- ROBERT G. RICE, B.S. Hofstra 1950; M.A. Wayne 1951. Division of employee compensation between direct money payments and wage supplements. *Columbia*.
- CHARLES E. ROCKWOOD, B.S. Illinois 1954; M.B.A. Western Reserve 1957. Wage controls and the problem of inflation. *Indiana*.
- PHILIP ROSS, B.A. California (Los Angeles) 1948. The government as a source of union power. *Brown*.
- LARRY G. SGONTZ, B.A. Wooster 1958; M.A. Illinois 1961. A comparative analysis of labor relations law in the United States, Canada, and England. *Illinois*.
- ARTHUR A. SLOANE, B.A. Harvard 1953; M.B.A. Columbia 1958. Labor relations in over-the-road trucking. *Harvard*.
- THOMAS M. STEVENSON, B.A. Southern Illinois 1956; M.A. 1958. Landrum-Griffith experience. *Illinois*.
- ARTURO R. TANCO, B.A. *Union* 1953; M.I.L.R. Cornell 1955. The development of labor relations in the Philippines. *Harvard*.
- MARCEL TENNENBAUM, B.A. Queens 1954; M.A. Columbia 1956. Analysis of growth of U. S. labor force with a focus on States 1870-1950. *Columbia*.
- ANDREW A. WILSON, B.A. Claremont Men's 1959. Wage determination in the Los Angeles grocery industry. *Claremont*.

Population; Welfare Programs; Consumer Economics

Degrees Conferred

- REGINALD T. APPELYARD, Ph.D. Duke 1962. Socio-economic determinants of assisted emigration from the United Kingdom to Australia.
- ROGER L. BURFORD, Ph.D. Indiana 1961. Effects of the federal cotton acreage programs on outmigration from Southern farms, 1930-40.
- DONALD F. COX, D.B.A. Harvard 1962. Information and uncertainty: their effects on consumers' product evaluation.
- JOHN A. DELEHANTY, Ph.D. Indiana 1962. Financing unemployment insurance benefits in Indiana: a review of experience and outlook for the future.
- NICHOLAS DEWITT, Ph.D. Harvard 1962. Costs and returns in education in the USSR: a study in the economics of education and the investment in human capital.
- BELTON M. FLEISHER, Ph.D. Stanford 1961. Some economic aspects of Puerto Rican migration to the United States.
- HUGH W. FOLK, Ph.D. Duke 1960. The income and employment of the aged.
- JOSEF HADAR, Ph.D. Minnesota 1962. Stock-flow analysis applied to consumer behavior.
- KHONDKAR T. HOSAIN, Ph.D. Duke 1961. Demographic factors in economic development as considered in the literature of the United Nations.
- JAMES W. LEASURE, Ph.D. Princeton 1962. Factors involved in the decline of fertility in Spain 1900-1950.

- WILLIAM A. MAUER, Ph.D. Duke 1960. An econometric analysis of consumers' expenditures with special reference to the expenditure for durable goods.
- FRANCESCO M. NICOSIA, Ph.D. California (Berkeley) 1962. Toward a model of consumer decision-making.
- ROY PENCHANSKY, D.B.A. Harvard 1962. Health and welfare plans in the building trades.
- RUTH RASCH, Ph.D. Johns Hopkins 1961. Federal housing policy: its aims and its accomplishments.
- JOHN J. REID, JR., Ph.D. Virginia 1962. The Veterans' bonuses: an analysis of a collective decision.
- EVERETT P. TRUEX, Ph.D. North Carolina 1962. A comparative analysis of per capita income and related factors in North Carolina counties and the United States for selected years from 1939 to 1954.

Theses in Preparation

- ROMAN R. ANDRUS, B.S. Brigham Young 1958; M.S. Columbia 1959. The colonization and urbanization of Utah: a study of the influence of the Mormon church on population distribution. *Columbia*.
- RICHARD M. BAILEY, B.S.C. New York State College for Teachers 1954; M.B.A. Indiana 1960. The effects of technological change upon the productivity and organizational structure of the "medical industry." *Indiana*.
- PHILLIP F. BRADY, B.A. Ontario 1956; M.S. Columbia 1957. The determinants of the emigration of scientists and engineers from Canada to the United States. *Columbia*.
- RALPH CALKINS, B.B.A. New Mexico 1947; M.A. 1949. Unit costs of programs in higher education. *Columbia*.
- JAMES M. CARMAN, B.S. Purdue 1953; M.B.A. Indiana 1956. The demand for durable home furnishings. *Michigan*.
- RONALD CONLEY, B.A. Washington 1958. Economics of vocational rehabilitation. *Johns Hopkins*.
- ROBERT J. ELLIS, B.A. Harpur 1959. The rate of investment in human resources and the growth of real income. *Virginia*.
- ARNOLD FADEN, B.A. City (New York) 1954. Theory and population distribution. *Columbia*.
- DONALD H. GRANBOIS, B.S. Illinois 1956; M.S. 1957. A study of the family consumption decision-process. *Indiana*.
- SAJJAD A. HASHMI, B.A. Karachi 1953; M.A. Punjab 1956. Social security in Pakistan. *Pennsylvania*.
- ALI HEZAREH, B.S. California (Berkeley) 1954. Financing of medical care for aged: a comparative evaluation of voluntary versus compulsory health insurance. *Southern California*.
- ALPHONSE HOLTMANN, B.S. Illinois 1959; M.S. 1960. The economic impact of alcoholism: a study in optimum resource allocation. *Washington (Saint Louis)*.
- SHIRLEY B. JOHNSON, B.A. Radcliffe 1956; M.A. Edinburgh 1958. Real income and wealth effects on American marriage patterns, 1900 to the present. *Columbia*.
- AHMED KHURSHID, B.A. Karachi 1953; M.A. Punjab 1955. A comparative analysis of the British and American social security systems. *Pennsylvania*.
- HENRY C. LITTLE, B.S. Missouri 1950; M.S. 1957. An analysis of consumer marketing information. *Missouri*.
- SANG OH PARK, B.A. Florida State 1957; M.A. 1959. An analysis of the economic aspects of North Carolina unemployment compensation program, 1947-1960. *North Carolina*.
- JAMES W. ROBINSON, B.A. Johns Hopkins 1960. Economic aspects of migration. *Duke*.
- GERALD D. ROSENTHAL, B.A. Cornell 1958; M.S. 1959. Hospital utilization. *Harvard*.

- ANTONIO J. SAGRISTA, B.A. Barcelona 1946; Ph.L. Facultas Philosophica Sancti Francisci de Borgia 1949; S.T.L. Facultas Theologica Sancti Alberti, Belgium 1957. Social security in Japan: past, present and future. *Cornell*.
- ROBERT F. SMITH, B.B.A. Oklahoma 1958; M.B.A. Arkansas 1959. Economic and financial analysis of unemployment compensation in the United States. *Illinois*.
- WILLIAM R. STEVENSON, B.A. Johns Hopkins 1956; M.B.A. Pennsylvania 1959. Consumer behavior and reference group theory. *Pennsylvania*.
- WILLIAM J. SWIFT, B.A. Valparaiso 1960; M.A. Washington 1962. The economic costs of discrimination in education. *Washington (Saint Louis)*.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Labor economists: Department of Labor has openings for work in the fields of wages, manpower, employment, labor and industrial labor conditions and related fields. Salaries range from \$6,435 to \$13,730 depending upon experience and training. To apply, send résumé or Standard Form 57 to the Executive Secretary, Board of U.S. Civil Service Examiners, U.S. Department of Labor, Washington 25, D.C.

Industrial organization, trade regulation, industrial concentration, structure of industry, price behavior: The Antitrust Division of the U.S. Department of Justice has openings for economists in Washington, D.C. Candidates should possess a background of education or experience in above fields. Duties involve the application of economic analysis to the enforcement of the antitrust laws. All positions are within the competitive civil service; entrance salaries range from \$5,355 to \$10,635 per annum. Write: Mr. John W. Adler, Chief, Personnel Office, Department of Justice, Washington 25, D.C.

Agricultural economist: Production economics research; rank and salary determined by education and research but range of \$8,500-\$11,000 possible. Short-term applicants unwanted. Supply information required in Federal Form No. 57. Interested parties apply Director, Land Study Bureau, University of Hawaii, Honolulu 14, Hawaii.

Technical assistant: For its program of technical assistant to the developing countries, the I.L.O. is looking for experts in the formulation and implementation of employment objectives in economic development to be assigned by the I.L.O. to serve as a member either (1) of the staff of a regional economic development institute to be set up in Latin America and later to be set up in Asia and Africa; or (2) of a group of experts advising a government on economic development planning and programming; or a combination of these functions. For details write to the Washington Branch Office, International Labor Office, 917 15th Street, N.W., Washington 5, D.C.

Economics: University teaching appointment in Latin America. Prerequisites: graduate of an accredited college with major in economics and emphasis in the labor field; experience in industry or trade union desirable; prefer applicant working toward advanced degree; native fluency in Spanish; amenable in social situations. Job description: two-year contract on staff of economics department in Latin-American university. Starting salary, \$7,500 to \$8,500, plus allowances, depending upon qualifications. Send résumé.

Economics: Ph.D., or all work completed except thesis, to take charge of area of economics. Rank, associate professor; salary according to education and experience. Write: Dr. T. Hillard Cox, Division of Business Administration and Economics, University of San Diego, San Diego, California.

Regional economics: Ph.D. or M.S. plus four years of research experience. Conduct fundamental and applied research on interdisciplinary problems in fields of regional development and long-range planning. Research on domestic and foreign areas using team approach. Send résumé of education and experience in research to L. G. Hill, Battelle Memorial Institute, 505 King Avenue, Columbus 1, Ohio.

Transportation economics: Ph.D. or M.S. plus four years of research experience. Conduct fundamental and applied research on domestic and foreign problems using interdisciplinary team approach. Send résumé of education and research experience to Battelle Memorial Institute (address above).

Economic planning: Ph.D. or M.S. plus four years of research experience. Conduct fundamental and applied research on area aspects of domestic and foreign problems using interdisciplinary team approach. Send résumé of education and research experience to Battelle Memorial Institute (address above).

Graphic economist: Bachelor's in geography plus two years' experience. Design and draw analytical (nonmathematical) maps and illustrative graphics using latest drafting, reproduction, and printing techniques and processes. Send résumé of education and experience to Battelle Memorial Institute (address above).

Economics: Ph.D. with deep interest in economic research. Position involves analysis of interrelationships between technical developments and the economic environment. The effort includes fundamental research in economics, macroeconomic analysis as an input to long-range planning, and interdisciplinary studies of the sociopolitical implications of the economic impact of changing technology. The ability to communicate in an interdisciplinary atmosphere is essential. Desired detailed résumé of education, experience, and interests (Battelle Memorial Institute; address above).

Economics: Applications are invited for a Lectureship or Senior Lectureship in Economics at the University of New England, Australia. Post involves undergraduate teaching in economic theory and/or money and banking, and research in fields of appointee's own interest. The normal teaching load is about four class hours per week. The Department is of moderate size, at present 12 faculty members. Salary scale for Senior Lecturer: £A2,597 by £A95 to £A3,047; for Lecturer: £A1,777 by £A105 to £A2,482. Status and initial salary according to qualifications and experience. Fare to Australia paid for appointee, wife, and children, plus a baggage allowance. Appointment may be permanent or for three years. In the latter case, £A400 will be paid toward return fares. Further information obtainable from Professor of Economics, University of New England, Armidale, N.S.W., Australia.

Economist: Ph.D. or M.S. plus two or more years of experience in research or evaluation of economic programs. Serve as Chief of an Economics Section. Responsible for preparation of economic base surveys; developing and/or adapting projects of factors affecting economic trends of national, regional, and local scope. Studies, analyzes, and evaluates assembled economic data. Makes recommendations regarding the economic justification for projects under consideration. Send résumé of education and experience, preferably on Government Standard Form 57, which may be obtained at any first class Post Office, to District Engineer, U.S. Army Engineer District, P.O. Box 60, Vicksburg, Mississippi.

Labor economics and statistics: Government agency responsible for studies and programs involving scientific and technical manpower seeks several economics graduates with training and/or experience in labor economics and statistics for positions in Washington, D.C., dealing with work in the area of labor force and employment, utilization and demand. Salary dependent on background and experience; opportunity for promotion. Send résumé or Federal Government Form 57 giving full details.

Transportation economist: Co-operative federal-state-local agency working on comprehensive transportation plans for upstate New York metropolitan areas is seeking an economist to work on its interdisciplinary research and planning team. Examples of work are forecasting regional economic growth and studying investment in transportation networks. Beginning salary \$9,450. Full data processing, computer, and publication facilities. Send résumé, including present salary, to Roger L. Creighton, Director, Niagara Frontier Transportation Study, 79 North Pearl Street, Albany, New York.

Labor market economist: To participate in a youth development program by conductive studies of long-range employment opportunities in the New Haven region and work with school personnel to provide proper training programs—other opportunities. Ph.D. in economics with 2 years of experience; or M.A. with 4 years of experience. Salary \$10,000. New Haven is undertaking a comprehensive action-research program with emphasis upon social services, education, employment, housing and services to the young and elderly. A nonprofit corporation has been established to study and act in these fields. Write: Community Progress, Inc., 270 Orange Street, New Haven, Connecticut.

Business administration: Position to begin September, 1963. Person whose teaching areas would be first-year accounting, management, marketing, finance, and to supervise business seminar in a small liberal arts college. Ph.D. or most requirements completed. Salary dependent upon education and experience. Apply to: Dean David A. Waas, Otterbein College, Westerville, Ohio.

Economics: Position to begin September, 1963. Person to teach principles of economics and several advanced economics courses in a small liberal arts college. Ph.D. or most requirements completed. Salary dependent upon education and experience. Apply to: Dean David A. Waas, Otterbein College, Westerville, Ohio.

Economist: With training and/or experience in regional economic analysis and development. Some knowledge of Canada's Maritime economy desirable but not necessary. Salary to \$8,000, depending on qualifications. Apply to: Director, Extension Department, St. Francis Xavier University, Antigonish, Nova Scotia, Canada.

Public finance, land and forest economics: Forest Service, Department of Agriculture, has opening for work in taxation, preparing ad valorem assessment guides for forest land and timber; also openings for studies of markets and demand for forest products. Forestry training desirable but not essential. Salary range GS-9 (\$6,435) to GS-13 (\$10,635). To apply send résumé or Standard Form 57 to Director, Division of Forest Economics and Marketing Research, Forest Service, U.S. Department of Agriculture, Washington 25, D.C.

Economists Available for Positions

Marketing, statistics, business and industrial economics: Man, 40, married; B.A., M.A., Ph.D. credits completed. Fourteen years of experience in designing and conducting economic and market research projects; contributor of articles to various publications. Seeks research position with business or industry. E1005

Economic theory, history of economic thought, industrial organization, government and business, economic development: Man, 46; Ph.D. Now engaged as economic and marketing consultant. Has had 12 years of teaching experience; 10 years consultation in government and international agencies. Seeks opportunity to teach advanced university courses. Expects appointment of at least associate professorship rank and salary of \$9,500. E1040

Business research: Man, married; Ph.D. Seeks responsible, challenging position in formulation of management information requirements, computer applications to business, performance evaluation, forecasting, long- and short-range planning, and action recommendations. Compensation according to responsibility. E1044

Economic theory, international economics, history of economic thought, labor economics, money and banking, comparative economic systems, economic development, economic fluctuations, public finance, industrial organization, economic history: Man 46; M.A., Ph.D. Years of teaching experience, including graduate teaching; Ford Foundation grant. Now on university faculty. Desires teaching position with a progressive institution. E1052

International economics, underdeveloped areas, particularly Latin American and Middle East, economic development, world regional blocs, international financial organizations: Man, 45, married; M.A., Ph.D. Experienced in government research; 10 years of teaching experience; wide experience in undergraduate courses. Presently teaching in large midwestern university. E1057

International finance, economic development, public finance, monetary and fiscal policy: Man, 33; M.A., Ph.D. requirements except dissertation substantially completed. Fellowships; languages; area concentration Western Europe and Southeast Asia. Four years of research experience in government and research organization. Seeks research position. Willing to relocate. E1064

Economic theory, economic history, economic geography: Man; B.S., M.B.A., requirements for Ph.D. completed except for dissertation. Six years of teaching experience; also business experience. Fellowship recipient. Desires teaching position on the East Coast. Available in fall of 1963. E1066

Principles, economic theory, international economics and monetary policy, economics of underdeveloped countries, business cycles and economics of growth, comparative economic systems: Man, 39, married; M.S., Columbia University, cand. Ph.D., University of Geneva; all requirements for Ph.D. completed except publication of dissertation (publication by major firm expected in 1962). Six years of successful teaching at large state university; Ford Foundation Fellow in Economics and numerous other research awards; many academic honors, including decoration by foreign government; author of 2 books, many articles; finest references. Desires teaching position with opportunity for research at rank and salary commensurate with experience. E1072

Public finance, money and banking, principles, economic thought, government and business: Man, 42; Ph.D. from distinguished midwestern university. Nine years of college teaching experience. Research experience with Federal Reserve System and state government. Learned journal publications. Desires teaching position in university or quality college with research opportunity. E1086

Principles, economic theory, monetary theory, business cycles and forecasting, labor: Man, 28, married, completing Ph.D. course work in June, 1962. Desires teaching position in a college or university in the West or Northwest. Available in June, 1962. Robert L. Peterson, P.O. Box 823, College Station, Washington State University, Pullman, Washington. E1087

Development, Communist and international economics: Man, 41; degree in law and economics, Swiss doctorate in economics, dissertation on Yugoslav development policy. Lived under Communist regime; taught economics in Pakistan; visited India, Burma, Nepal; knows most West European countries; speaks English, German, French, Italian, Russian, Serbo-Croat and Slovene; understands Spanish and other Slavonic languages. Excellent references; several publications. Seeks teaching and/or research post. E1087

Business economics, statistics, public finance, money and banking, corporation finance, planning, cycles, investments: Man, 53; M.A. Successful career as administrator, economic research in government, banking, trade association, manufacturing and consulting; some teaching. Seeks university teaching, director of bureau of business research or administration or combination. E1088

Economics, finance, business administration: Man, 69. To be retired from large eastern university. Latin-American specialist, widely traveled as United Nations and Point Four expert. Fluent in Spanish, German, French; speaking knowledge of Russian. Has long list of publications. Desires position in research or teaching. Available in May, 1963. E1089

Principles of economics, business economics, consumer economics, intermediate economics, government and business, national income economics, transportation: Man, 43; Ph.D. Eight years of teaching and 5 years of business experience. Desires new position which permits concentration in one or two of the above areas. Available in June or September, 1963. E1090

U.S. economic history, international economics, economic theory and history, money and banking, corporation finance: Man, 30; M.A. from foreign university and M.A. from American; candidate for Ph.D. with course work completed. Eight years of banking experience; 5 years of writing and research with U.S. agency; some teaching experience; publications. Fellow, Royal Economic Society, Royal Statistical Society; member, Institute of Bankers, London. Wishes to devote full time to teaching and writing. Available in September, 1962. E1091

Principles of economics, labor, anthropology: Woman; M.A., L.T., Madras University; M.A., Ph.D., 1957, Northwestern University. Twenty-one years of teaching experience (2 years in the U.S.); 2 years as acting principal of college for women; Fulbright Travel Grant; Carnegie Scholarship. At present professor of economics and vice principal of a college for women. Desires position as a visiting teacher or researcher in East or in California. Available for spring and summer session, 1963, or for full year. E1092

International economics, economic theory: Man, 27, married; M.A. in economics from midwestern university. Three years of experience as international economist with U.S. government agency. Desires research, teaching, and/or administrative position with university or college, business, or private organization in Southwest. E1093

Labor economics, money and banking, economic thought, international economics, principles: Man, 26, married; B.B.A., M.A., economics. Fluent in French and Spanish; listed in American Men of Science, Leaders in American Education, 1962 eds. Résumé available. Seeks teaching, research, or administrative position with university or business. Available upon appointment. E1094

Accounting and related subjects: Man, 29, married; M.B.A., C.P.A. Experience includes 3 years of governmental auditing. Desires teaching position. E1095

Theory, mathematical economics, international economics, statistics, public finance: Man, 35, married; Ph.D. Years of successful teaching; good number of articles and book reviews. Desires teaching position at graduate level with research opportunities. Available in June or September, 1963. E1096

Economics, most fields except statistics: Man, over 50; Ph.D. Now teaching in university overseas; academic and practical work in developmental economics; federal service abroad and in Commerce Department. Would join international entity in planning or related capacity; fluent Spanish; no business courses or experience. Prefers teaching in New England, Southwest, Northwest, British Columbia, or Quebec. Available in September, 1963; perhaps earlier if offer is superior to present position. E1097

Finance, investments, real estate, money and banking, forecasting, economics: Man, 49; Ph.D. Unusually successful business experience plus many years of part-time teaching experience. Desires full-time college or university position. E1098

Econometrics, statistics, etc.: Man, 30; M.A., D.Phil. Lecturer at a British university. Seeks summer appointment from July 1, 1963. E1099

Business economics: Mature man, married; Ph.D. Successful economist for leading corporation; previous university teaching experience. Interested in opportunity to develop graduate program for business economists. E1100

Labor economics, labor legislation, collective bargaining, money and banking, history of thought, principles: Man, 39, married; B.S., A.M. Six years of full-time college teaching; research experience. Interested in teaching and/or research position, Northeast or West Coast location. Available in June or September, 1963. E1101

What the world's best telephone service is built on

The foundation of your telephone service is composed of three integrated Bell System activities.

First, there's **research** at Bell Telephone Laboratories to find new telephone services and new ways to improve present services.

Second, there's **manufacturing** by the Western Electric Company in order to produce top-quality telephone equipment at the lowest possible cost.

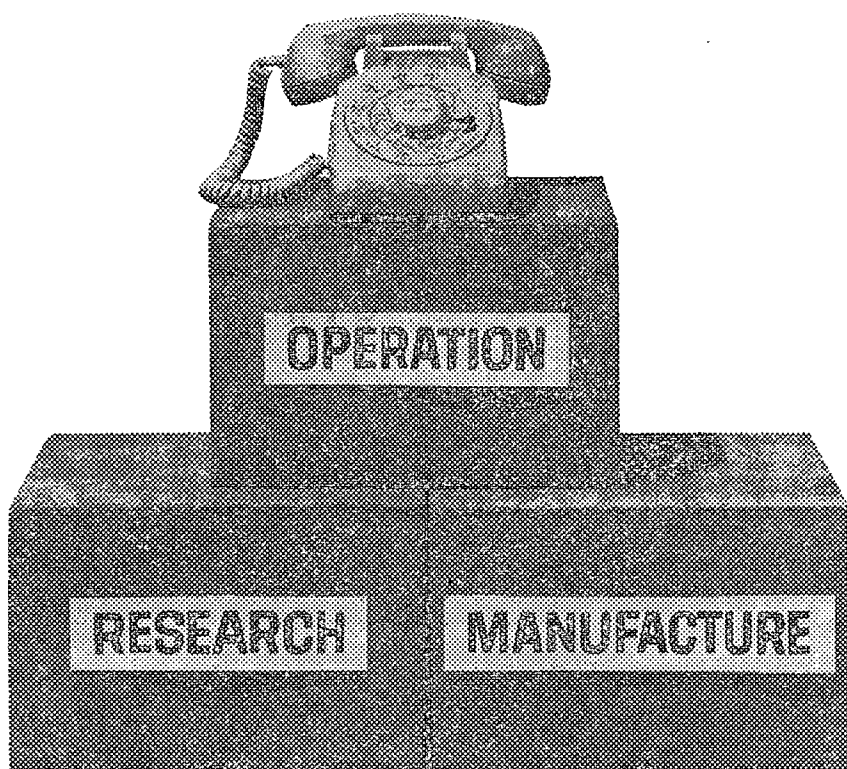
Third, there's the **operation** of the Bell System performed by the local Bell Telephone Companies at high standards of economy and efficiency.

The results of this three-stage action are improved local and Long Distance service... ever-better telephone instruments... the invention and use of such modern marvels as the Transistor... fast, dependable communications for the nation's defense and for you.



BELL TELEPHONE SYSTEM

Owned by more than two million Americans



New Books for the Economist

Banking

☐ MORTGAGE LENDING,

Second Edition

By WILLIS R. BRYANT, *Bryant-Johnson Mortgage Company, San Francisco.*

432 pages, \$8.50.

This book provides an integrated and comprehensive introduction to mortgage lending, mortgage banking, the mortgage market and all related activities. There is information on procedures and an appraisal of the social significance of mortgage lending. The new edition incorporates recent developments in the mortgage lending industry and in related activities as well as the essential updating of statistics and other pertinent data.

☐ CASES IN COMMERCIAL BANK MANAGEMENT

By LEONARD MARKS, Jr., *Stanford University*; and ALAN B. COLEMAN, *Harvard University.*

416 pages, \$7.95.

Emphasizing bank management, the 50 case problems present real situations confronting bank managers. Topics covered are commercial banking functions and responsibilities, except trust activities. The case studies introduce the art of banking and broad problems of commercial bank management, including organization and determination of operating policies and objectives, and specific bank management. The last section contains a series of cases dealing with general management problems and strategy considerations in growth and diversification. All cases have been written in the past six years and are drawn from commercial banks throughout the United States.

Economics

☐ NATIONAL INCOME AND THE PRICE LEVEL: A Study in Macrotheory

By MARTIN J. BAILEY, *The University of Chicago.*

320 pages, \$6.95.

This clear and concise discussion of the theory of national income determination

and related theory and policy problems fulfills the need for an integrated and systematic treatment of the subject. The author draws upon all points of view, but especially the Keynesian and Neo-Classical approaches. An encyclopedic approach is avoided, yet all main ideas and issues in the field are thoroughly covered. Numerous illustrations lucidly show the progression of ideas.

☐ ECONOMIC SECURITY IN THE UNITED STATES

By VALDEMAR CARLSON, *Antioch College. Economics Handbook Series.*

240 pages, \$6.50.

This challenging text asks the reader to study the subject of economic security objectively. It is a venture in institutional economics, written to provide a synthesis or a perspective on economic security. The book maintains that the scope and character of economic security in the United States is determined by the imperatives of the market system. Each of the programs of economic security is covered in the context of a functioning economy. The text helps the reader gain an overall understanding of each of the programs of economic security, including private pension plans and welfare programs, by subordinating details of individual acts in favor of historical developments and theoretical interpretations.

☐ INCOME AND WELFARE IN THE UNITED STATES

By JAMES N. MORGAN, HARVEY E. BRAZER, WILBUR J. COHEN, *all of the University of Michigan*; and MARTIN H. DAVID, *The University of Wisconsin.*

544 pages, \$7.95.

A national personal-interview survey is employed to study the distribution and redistribution of income, what determines peoples' incomes, and the intergenerational transmission pattern. The analysis of this survey combines demographic, economic, and social-psychological measurements on each family studied to give a detailed explanation of what determines the economic position of that family.

COLLEGE

McGRAW-HILL BOOK COMPANY, INC.



DIVISION

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

from McGRAW-HILL ✓

☐ INTERNATIONAL ECONOMIC INSTABILITY

By JOSEPH D. COPPOCK, *Earlham College; currently Director, Foreign Economics Advisory Staff, Office of the Under-Secretary, U. S. Department of State, Washington, D.C. Economic Handbook Series.*

192 pages, \$7.95.

Describes and explains international economic instability, emphasizing the years since World War II with a view to evaluating and devising measures for reducing such instability when it serves no useful purpose. The basic approach is empirical, stressing policy considerations. Contains highly original material in chapters three and four, including some new and interesting factual conclusions about international economic instability during the postwar years. The country approach is stressed, since countries are the primary organizational units for dealing with the problem.

☐ ECONOMIC ANALYSIS FOR ENGINEERING AND MANAGERIAL DECISION MAKING

By NORMAN N. BARISH, *New York University.*

752 pages, \$9.95.

This book discusses the premise that making decisions is the key function in engineering and business activity; and that most of the engineering and management decisions made in industry are, or should be, based upon economic analysis. It presents basic reasoning and methodology of various disciplines important in decision making: economics, accounting, probability and statistics, operations research.

Accounting

☐ ACCOUNTING: The Basis for Business Decisions

By WALTER B. MEIGS, *University of Southern California*; and CHARLES E. JOHNSON, *University of Oregon.*

896 pages, \$7.95.

The fundamentals of accounting are presented in a thorough and comprehensive manner. Distinctive characteristics of the book are emphasis on theoretical accounting concepts and use of accounting to achieve managerial goals. Chapters on "Income Tax" and "Budgeting" included in addition to material usually found in

introductory books. Some problems in every chapter call for interpretation as well as application of principles and procedures. Book includes complete coverage of the basic procedures of accounting, the reasoning underlying their development, the way in which financial statements are derived. Emphasis in both text and problems is on meaning and use of accounting data. Many mechanical details are either omitted or given minimum treatment. Considerable attention devoted to the effect of various business transactions on financial position and periodic income determination.

☐ ACCOUNTING: Intermediate

By WALTER B. MEIGS, *University of Southern California*; CHARLES E. JOHNSON, *University of Oregon*; and THOMAS F. KELLER, *Duke University.*

Available in February, 1963

This second volume of a modern integrated accounting series emphasizes theoretical accounting concepts and the use of accounting data in the decision-making process. The theoretical analysis is closely correlated with the studies and publications of the American Institute of Certified Public Accountants and of the American Accounting Association. Among the outstanding features of this book are thorough exploration of such controversial current topics as executive stock options, allocation of income taxes, and fund flows. The analysis of accounting data is presented from the viewpoint of management concerned with control and decision making and also from the standpoint of outsiders.

Also of interest . . .

☐ TEACHER SHORTAGE AND SALARY SCHEDULE

By J. A. KERSHAW, *Williams College*, and R. N. MCKEAN, *Rand Corporation.*

Available in October.

☐ CREDITS AND COLLECTIONS: Management and Theory, Seventh Edition

By THEODORE BECKMAN, *The Ohio State University.*

640 pages, \$8.50.

Send for copies on approval

330 West 42nd Street, New York 36, N. Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

OXFORD BOOKS

OF EXCEPTIONAL INTEREST

THEORY OF MONEY

By W. T. NEWLYN. This is a rigorous but brief exposition of monetary theory, narrowly defined, that examines the ways in which monetary policy affects the economy. Throughout the book the author points out the relation between his own analysis and that of the Radcliffe Committee (on the workings of the Monetary System) which, in his view, requires careful interpretation if it is not to mislead. *30 text figures.* \$2.90

MEXICO

Revolution to Evolution, 1940-1960

By HOWARD F. CLINE. The Director of the Hispanic Foundation, Library of Congress, presents the history of the two eventful decades since the exciting days of General Cardenas. He discusses the booming Mexican economy; Mexican political stability, and the famous single-party democracy; agrarian reform; labor movements; education; and international affairs. *19 statistical appendices; annotated select bibliography; 25 maps; 5 diagrams. (Royal Institute of International Affairs)* \$6.75

LAND REFORM AND DEVELOPMENT IN THE MIDDLE EAST

A Study of Egypt, Syria, and Iraq

Second Edition

By DOREEN WARRINER. This Second Edition brings the first, published in 1957, up to date with the exception of the chapter on Iraq, which remains unchanged. A new Postscript on *Agrarian Reform in the United Arab Republic*, based on personal observations in 1961, reviews the later evolution of agrarian reform policy in Egypt and describes the first stages of reform in Syria. \$3.40

THE HISTORY OF THE GOLD SOVEREIGN

By SIR GEORGE DUVEEN and H. G. STRIDE. Here is the story of this world-renowned coin, from the first coin of that name struck in 1489—a hammered coin of great dignity and artistic merit—down to the present day. Written also from the historical and economic points of view, this book stresses the importance of gold coinage in Britain's development of trade with the Continent over the centuries. *24 pages of halftones.* \$4.80

At all bookstores

OXFORD UNIVERSITY PRESS, New York 16

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

MONEY, BANKING, AND MONETARY POLICY

CLIFTON H. KREPS, Jr., *University of North Carolina*

This important new textbook affords the student a thorough understanding of the national economic significance of monetary and banking policy. Theory is woven throughout in a highly integrated approach to the essential principles of money and banking. Attention is thus focused on the "why" of institutional

processes rather than the "how." The analytical discussion of the history of money and banking development places in true perspective the complex issues of theory and policy. Book contains ample question, problem, and bibliographical material. 1962. 607 pp. \$7.50

PUBLIC FINANCE

EARL R. ROLPH and GEORGE F. BREAK
—both *University of California, Berkeley*

A class-tested presentation of the many theoretical and technical issues involved in public finance at all levels of government. The book effectively demonstrates how economic intelligence can be applied to illuminate the problems of public finance; provides a descriptive-historical analysis of government finance

today and its role in the economy. It draws mainly on American experience in fiscal affairs, but incorporates evidence from other countries where applicable. Current social security programs are examined as well as problems arising from metropolitan growth, fiscal theory and policy, etc. 1961. 586 pp. \$7.50

PERSONAL FINANCE

ELVIN F. DONALDSON and JOHN K. PFAHL
—both *The Ohio State University*

Popular textbook provides an authoritative discussion of the wide range of problems involved in the management of personal finances. In readable, non-technical style, it covers income and budgeting of financial resources, home-buying, uses of credit, etc. Book offers expanded coverage of estate and retire-

ment planning; U. S. Savings Bonds; life, property, casualty, accident and sickness insurance; federal income tax law; etc. Includes a wealth of illustrative material and practical case-problems. Instructor's Manual available. 3rd Ed., 1961. 717 pp. \$7.50

ECONOMIC AND SOCIAL SECURITY

Public and Private Measures Against Economic Insecurity

JOHN G. TURNBULL and C. ARTHUR WILLIAMS, Jr., both
University of Minnesota; and EARL F. CHEIT,
University of California, Berkeley

Second Edition! Designed for students of social insurance and social security, this new book offers a thorough discussion of the various public and private measures for extending economic security. The emphasis is on principles and understanding; abstract discussion of statistical detail is avoided. Following the carefully planned and successful pat-

tern established in the original volume, the Second Edition retains the use of analytical tools in evaluating the private and social insurances and assistances involved in such problems as old age and death, occupational disability and non-occupational illness, unemployment, and sub-standard working conditions. 2nd Ed., 1962. 552 pp. \$8.00

THE RONALD PRESS COMPANY

15 East 26th Street, New York 10, New York

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

ESPECIALLY RECOMMENDED

PUBLIC POWER IN NEBRASKA

A Report on State Ownership

By Robert E. Firth

Nearly three decades ago Nebraska became the nation's only "all public power" state. In this first definitive account of this development, Dr. Firth gives a forthright analysis of public power management in the state and discusses solutions to problems besetting the various generating and distributing districts. 402 pp., charts, graphs, maps, notes, bibliography, index. \$6.00

HUMAN NATURE IN POLITICS

By Graham Wallas

Introduction by A. L. Rowse

"... one of the most important and original contributions to political thought ... in this century." (A. L. Rowse.) Indispensable collateral reading for every undergraduate student of economics. 314 pp., index. \$1.40



University of
Nebraska Press
Lincoln

New books from the

REAL ESTATE RESEARCH PROGRAM AT UCLA

The Secondary Mortgage Market: Its Purpose, Performance, and Potential.

By Oliver Jones and Leo Grebler.

281 Pages. \$6.50.

The Cal-Vet Program: A Study of State-Financed Housing in California.

By Edward L. Rada.

173 Pages. \$4.50.

Management in the Light Construction Industry: A Study of Contractors in Southern California.

By James Gillies and Frank G. Mittelbach.

109 Pages. \$2.50.

Order from:

Real Estate Research Program
Graduate School of Business Administration
University of California
Los Angeles 24, California

Write for complete list of publications



An Outstanding P-H Publication

Robert L. Heilbroner's book offers a new approach to economics. In vivid prose and swift narrative style, he has set forth the basic elements of economic thought in a context at once dramatic and meaningful—the context of history. But Heilbroner has aimed higher than an introduction to economic history. As the reader retraces the sweep of economic evolution, from slave systems and feudalism down through the Industrial Revolution to the present, he is introduced to the essentials of economic theory as the key by which economic history must be understood. Thus history and theory mutually illuminate one another, each rendering the other more significant and intellectually exciting.

The Making of Economic Society

by Robert L. Heilbroner

Heilbroner has not attempted to supplant the standard text. Although *The Making of Economic Society* presents the main outlines of economics in carefully organized fashion, it is intended primarily as a stimulus for more formal study, particularly in the case of economics majors. Few readers, however, will fail to benefit from the lucid exposition of fundamental economic ideas or from their brilliantly revealed relevance to economic issues, past and present. 241 pp., Paperbound: \$2.95, Cloth: \$4.95

Write for an approval copy

PRENTICE-HALL, INC.

BOX 903—ENGLEWOOD CLIFFS—NEW JERSEY



Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

**IRWIN
BOOKS**

FOR FALL CLASSES

THE SOVIET ECONOMY: A Book of Readings

By Morris Sarnstein and Daniel R. Lusfeld, both of the University of Michigan

The excellent paperback volume studies planned economies, particularly that of the Soviet Union, and compares them with the American economy.

ECONOMIC POLICY: Readings in Political Economy

Revised Edition

By William D. Crump, University of Illinois, and Emanuel C. Walter, Purdue University

The editors group full-length articles by outstanding economists around the four great problems of an enterprise economy: stability, equality, abundance, and international trade.

CURRENT ECONOMIC PROBLEMS, Third Edition

By Henry William Spiegel, Catholic University of America

Revised and updated, the Third Edition utilizes and shows in operation the most recent advances in economic theory.

READINGS IN CURRENT ECONOMICS, Revised Edition

By Morton C. Grossman, Reed E. Hanson, Chas. S. Hendriksen, Harry E. McAllister, Kerji Okada, all of Washington State University, and William Walman, Business Week.

This revised volume complements the modern contemporary principles texts and enhances student interest and understanding.

CONSIDER THESE NEW PAPERBACK VOLUMES

LOMBARD STREET: A Description of the Money Market

By Walter Bagehot, with a new introduction by Frank C. Conovese, Johnson Institute
Text Price: \$2.25

**THE UNITED NATIONS AND U. S. FOREIGN
ECONOMIC POLICY**

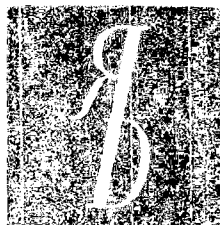
By Benjamin H. Higgins, University of Texas

Text Price: \$3.75

DEVELOPMENT OF THE INDIAN ECONOMY

By W. R. Reddaway, University of Cambridge

Text Price: \$3.75



Write for examination copies

RICHARD D. IRWIN, INC.
HOMERWOOD, ILLINOIS

Please mention THE AMERICAN ECONOMIC REVIEW When Writing a Advertisement

THE AMERICAN ECONOMIC REVIEW

VOLUME LXX

December 1962

NUMBER 5

ARTICLES

- The Production Function: Allocation and Growth *Martin Frankel*
Entry, Innovation, and the Growth of Firms *Edwin Mansfield*
The Firm under Regulatory Constraints *Harvey Akerch*
and Leland Johnson

REVIEW ARTICLE

- Competition as a Dynamic Process *Myron Watkins*

COMMUNICATIONS

- The Theory of Expansion of the Firm *William Baumol*
The End of the Golden Age in Slovakia *Jeor Pearce*
Comment *Edmund Phelps*
The Marginal Efficiency Function: Comment *Oliver Williamson*
Comment *Lawrence Abbott*
Reply *Lerie Tarshis*
Foreign Exchange Guarantees: Comment *Robert Aliber*
Reply *S. T. Bora and Gardner Patterson*
Stochastic Reserve Losses and Bank Credit: *H. L. Miller, Jr.*
Comment *Daniel Orr and W. G. Mellon*
Reply
-

The Journal of
THE AMERICAN ECONOMIC ASSOCIATION

THE AMERICAN ECONOMIC ASSOCIATION

Founded in 1950

OFFICERS

President

EDWARD S. MASON, Harvard University

President-elect

GORTON D. LINDBERG, Harvard University

Vice President

ARTHUR G. HANF, Columbia University

RICHARD A. MESSERIAN, Princeton University

Secretary-Treasurer and Editor of Proceedings

RAYMOND E. MUNDWAGON, Northwestern University

Managing Editor of the American Economic Review

BENJAMIN E. MAYER, Harvard University

EXECUTIVE COMMITTEE

Elected Members of the Executive Committee

LEONARD GINSBURG, Harvard University

ROBERT H. VANCE, Federal Reserve System, Federal Reserve Bank of St. Louis

FRANK C. SHAPIRO, The University of Chicago

CHARLES H. LOWN, The American Economic Association, Institute of Economics

ROBERT E. LUTWAK, Yale University

W. ALFRED WALLACE, University of Chicago

Ex-Officio Members

EDWARD S. MASON, University of Chicago

PAUL A. SCHWARTZ, The American Economic Association

MEMBERSHIP AND PUBLICATIONS DEPARTMENT

Publication and business office: 1000 Reed Plaza, Menlo Park, California.

Our Association's *Proceedings* have been clearing for shipment to members, and *Proceedings* of the annual meetings, the *Journal of Monetary Economics*, and *Quarterly Journal of Economics* are being shipped to our members. All orders for the time remaining in March, April, May, June, September and October.

Memberships for 1960 are \$4.00 a year, plus a small book which may be purchased for an additional \$1.50 a year. The Rising Star membership for 1960 is \$10.00 a year. Single copies \$2.00.

Correspondence relating to the *Journal* and *Proceedings*, the *Quarterly*, or requests for permission to reproduce material for publication, should be sent to the Department of Publications, 1000 Reed Plaza, Menlo Park, California 94025. Please include a return address, so that we may be able to send you a complimentary copy of the *Journal* or *Proceedings* by the time of the annual meeting, if you wish to do so.

Send all correspondence to: M. A. E. A., 1000 Reed Plaza, U.S.A.

THE AMERICAN ECONOMIC REVIEW

BERNARD F. HALEY, Managing Editor

JANE LADD, Assistant

BOARD OF EDITORS

Martin Bronfenbrenner
Albert O. Hirschman
Alfred E. Kahn
Roland N. McKean

Joseph A. Pechman
Melvin W. Reder
Tibor Scitovsky
Robert Solow

Volume LII

DECEMBER 1962

Number 5

ARTICLES

- The Production Function in Allocation and Growth: A Synthesis *Marvin Frankel* 995
- Entry, Gibrat's Law, Innovation, and the Growth of Firms *Edwin Mansfield* 1023
- Behavior of the Firm under Regulatory Constraint
Harvey Averch and Leland Johnson 1052

REVIEW ARTICLE

- Competition as a Dynamic Process *Myron Watkins* 1070

COMMUNICATIONS

- On the Theory of Expansion of the Firm *William Baumol* 1078
- The End of the Golden Age in Solovia
Comment *Ivor Pearce* 1088
Edmund Phelps 1097
- The Marginal Efficiency Function:
Comment *Oliver Williamson* 1099
Comment *Lawrence Abbott* 1104
Reply *Lorie Tarshis* 1110
- Foreign Exchange Guarantees: Comment *Robert Aliber* 1112
Reply *S. T. Beza and Gardner Patterson* 1117
- Stochastic Reserve Losses and Bank Credit:
Comment *H. L. Miller, Jr.* 1118
Reply *Daniel Orr and W. G. Mellon* 1120

BOOK REVIEWS

- ALFANDARY-ALEXANDER, An Inquiry into Some Models of Inventory Systems, by
H. L. Miller, Jr. 1178
- BACKMAN, The Economics of the Electrical Machinery Industry, by N. Mercer .. 1184
- BENHAM, Economic Aid to Underdeveloped Countries, by J. D. DeForest 1167

Manuscripts and editorial correspondence relating to the regular quarterly issues of this REVIEW should be addressed to John G. Gurley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California. *Style Instructions* for guidance in preparing manuscripts in acceptable form will be provided upon request to the editor.

No responsibility for the views expressed by authors in this REVIEW is assumed by the editors or the publisher, The American Economic Association.

Copyright American Economic Association 1962

BENSON, The Economics of Public Education, by F. Shaw	1215
BLOCH-LAINÉ AND DE VOGÜÉ, Le trésor public et le mouvement général des fonds, by C. Shoup	1165
BRADY, Organization, Automation, and Society—The Scientific Revolution in Indus- try, by W. Adams	1179
BUCHANAN AND TULLOCK, The Calculus of Consent: Logical Foundations of Con- stitutional Democracy, by M. Olson, Jr.	1217
CAIRNCROSS, Factors in Economic Development, by G. Meier	1142
CARLSON, Economic Security in the United States, by J. Skeels	1213
CHRISTENSON, Economic Redevelopment in Bituminous Coal: The Special Case of Technological Advance in United States Coal Mines, 1930-1960, by M. Baratz .	1191
CLARK, Competition as a Dynamic Process, by M. Watkins (review article)	1070
CORRY, Money, Saving and Investment in English Economics, 1800-1850, by D. Dillard	1156
CRAMP, Opinion on Bank Rate, 1822-60, by D. Dillard	1156
DAVID, Family Composition and Consumption, by P. Simpson	1210
ECKSTEIN, YIN AND YIN, The National Income of Communist China, by Y. L. Wu	1145
FERGUSON AND KREPS, Principles of Economics, by S. N. Whitney	1125
FISHMAN AND FISHMAN, The American Economy, by L. Blum	1126
FULLER, The Gentlemen Conspirators: The Story of the Price-fixers in the Electrical Industry, by N. Mercer	1184
GALBRAITH, Economic Development in Perspective, by G. Meier	1142
GANNAGÉ, Economie du développement, by J. Sheahan	1144
GERN, L'indexation des salaires: ses répercussions économiques, by H. W. Davey	1204
GHOSH, The Financing of Economic Development, by F. C. Child	1163
GIERSCHE, Allgemeine Wirtschaftspolitik—Grundlagen, by G. Grosschmid	1124
GORDON, The Investment, Financing and Valuation of the Corporation, by D. Bodenhorn	1174
HABAKKUK, American and British Technology in the Nineteenth Century: The Search for Labour-Saving Inventions, by J. Schmookler	1134
HARTLE, The Employment Forecast Survey, by R. Ferber	1205
HASAN, Deficit Financing and Capital Formation—The Pakistan Experience, 1951- 1959, by F. C. Child	1163
HENDERSON, The Industrial Revolution in Europe, 1815-1914, by P. David	1137
HOLLAND, Dividends under the Income Tax, by E. Rolph	1161
JOHNSON, Canada in a Changing World Economy, by H. C. Eastman	1171
KATONA, LININGER, MORGAN AND MUELLER, 1961 Survey of Consumer Finances, by P. Simpson	1210
KLEIN, An Introduction to Econometrics, by E. Mills	1151
KRAVIS, The Structure of Income—Some Quantitative Essays, by P. Simpson	1210
KRELLE, Preistheorie, by C. Efrogymson	1132
KREPS, Money, Banking and Monetary Policy, by H. Gordan	1158
LAMPMAN, The Share of Top Wealth-Holders in National Wealth, 1922-56, by O. Brownlee	1150
LÉVY, Analyse structurale et méthodologie économique, by N. Georgescu-Roegen ..	1123
LUTZ, The Problem of International Economic Equilibrium, by A. Chiang	1170
MAASS, HUFSCHEMIDT AND OTHERS, Design of Water-Resource Systems—New Tech- niques for Relating Economic Objectives, Engineering Analysis, and Governmen- tal Planning, by J. Milliman	1188
MARSHALL, Principles of Economics, by V. Bladen	1127
MAXWELL, Tax Credits and Intergovernmental Fiscal Relations, by J. K. Butters .	1159
MCCRONE, The Economics of Subsidizing Agriculture: A Study of British Policy, by E. Heady	1196
MODIGLIANI AND COHEN, The Role of Anticipations and Plans in Economic Be- havior and Their Use in Economic Analysis and Forecasting, by A. Okun	1176
NEUMARK, editor, Die Konzentration in der Wirtschaft, by E. Grunberg	1186
REES, The Economics of Trade Unions, by A. M. Cartter	1208

SCHWARTZ, Lectures on the Mathematical Method in Analytical Economics; Vol. I, Mathematics and Its Applications, by D. V. T. Bear	1129
SHISTER, AARON AND SUMMERS, editors, Public Policy and Collective Bargaining, by F. Whitney	1202
SOBOLEV, Khozraschet v kolkhozakh (Economic Accounting in Collective Farms), by J. F. Karcz	1193
SPULBER, The Soviet Economy: Structure, Principles, Problems, by M. Bornstein	1147
STANBACK, Postwar Cycles in Manufacturers' Inventories, by R. Robinson	1154
WASSERMAN AND HULTMAN, Modern International Economics—A Balance of Payments Approach, by S. E. Braden	1173
WENDT, Housing Policy—The Search for Solutions: A Comparison of the United Kingdom, Sweden, West Germany, and the United States Since World War II, by W. C. Freund	1198
WILCOX, WEATHERFORD AND HUNTER, Economies of the World Today—Their Organization, Development, and Performance, by L. F. Manly	1148
WITTE, The Development of the Social Security Act, by J. Skeels	1213
ZIELINSKI, Rachunek ekonomiczny w socjalizmie (Economic Calculation under Socialism), by L. Smolinski	1153
Employment Objectives in Economic Development—Report of a Meeting of Experts, by S. A. Levitan	1200
Gegenwartsprobleme des öffentlichen Haushalts; Schriftenreihe der Hochschule Speyer, Vol. 12, by G. Colm	1166
The Rate and Direction of Inventive Activity: Economic and Social Factors, by W. P. Strassmann	1139

OTHER DEPARTMENTS

Titles of New Books	1219
Periodicals	1238
Notes	1249



The American Economic Review

VOLUME LII

DECEMBER 1962

NUMBER FIVE

THE PRODUCTION FUNCTION IN ALLOCATION AND GROWTH: A SYNTHESIS

By MARVIN FRANKEL*

Two production functions have over recent decades occupied a prominent place in aggregative economics. One of these is the well-known Cobb-Douglas type of function, $P = aK^{\beta}L^{\alpha}$, where P is total output, a is a constant, K and L are the quantities employed of capital and labor, and where the exponents sum to unity. This function has played a central role in efforts to explain the alleged relative stability in the income shares of capital and labor and has inspired an admixture of hope, belief, and skepticism that it summarizes some general and fundamental laws governing production and distribution [4] [6] [11] [12]. The other function is a more elementary one of the form $P = f(K)$ or simply $P = aK$, where a may be interpreted either as the output-capital ratio or, in some contexts, as the reciprocal of the accelerator. This function is commonly found in growth models of the kind made popular by Harrod and Domar.

Each of these functions has virtues which, unfortunately, serve to emphasize the limitations of the other. The Cobb-Douglas type of function makes output dependent on at least two productive factors. It implies diminishing marginal returns to either factor with the other fixed and also diminishing marginal rates of substitution between factors. With both factors variable, it exhibits constant returns to scale, a characteristic which perhaps represents a sound middle ground between the other two alternatives. Not the least of its merits lies in what it asserts about factor rewards. Payment to each factor of its marginal product will exactly exhaust total output.¹ These properties, all funda-

* The author is research professor in the Bureau of Economic and Business Research, University of Illinois. He acknowledges with thanks helpful comments on the paper by Hans Brems, Robert Ferber, Anders Ølgaard, and Robert Resek, and the statistical assistance of Anne Y. Harper.

¹ Of less certain merit is the property of unitary elasticity of substitution whose presence insures that, provided factors are paid at rates corresponding to their marginal products,

mental in economic thinking about resource allocation and income distribution, hold appeal on both theoretical and empirical grounds.

The advantages of the function $P=aK$ lie in a quite different direction. When this function is used in a simple growth model, in which investment (saving) is a constant fraction of output,² results are generated that make rough sense in terms of observed experience. Thus, a rate of net investment of 10 per cent together with an output-capital ratio of one-third will yield in such a model an annual growth rate of about 3 per cent. Economists have found such models attractive because of their relatively simple structure, because of the emphasis they give to capital accumulation as an "engine of growth"—an emphasis with deep roots in economic thought—and because of their pragmatically satisfying results. In consequence they have played a central role during recent years in theories of growth and development.

Unfortunately the production function $P=aK$ has nothing interesting to say about resource allocation or income distribution. Worse than this, as a general statement of the resources required in production, it is positively wrong, as any one-factor production function must be. The limitations of the Cobb-Douglas function, this time in a growth setting, are less transparent but nonetheless weighty. When this function is used in a growth model of the kind just described, with growth in the labor force taken as autonomous, the resulting *long-term* rate of growth in output turns out to equal the rate of growth in the labor force. Growth in output per worker, commonly regarded as the essence of development, is zero, and the rate of investment exerts no effect!³

A second limitation of the Cobb-Douglas function appears when it is fitted to historical data. An improved fit generally is obtainable if the exponents β and α are allowed to vary freely instead of being constrained to equal unity. With some sets of data, the resulting sum of the exponents has differed significantly from unity, an outcome that opens the door to economies and diseconomies of scale and that leads to abandonment of the convenient assumption that factors are paid their marginal products. A reluctance to use the Cobb-Douglas function in its pure form results also from findings like those of M. Abramovitz that for the

factor shares will remain stable. The use of a constant elasticity function, a broader class of linear homogeneous production functions in which the Cobb-Douglas function becomes a special case, opens up interesting possibilities for economic analysis. See [2].

Share stability is not an issue of consequence in the present paper. Although the unitary elasticity property of the Cobb-Douglas function, like others of its properties, affects the particular results obtained at various points, the main line of argument is not dependent on it. For the purpose at hand, moreover, there are advantages in the function's simplicity and familiarity.

² See below pp. 1009-10 for an example of such a model. Substitute $P=aK$ for (5) and neglect (5d) and (5e).

³ See below, p. 1010. Also [14].

United States for the interval from 1869-78 to 1944-53, "The source of the great increase in net product per head was not mainly an increase in labor input per head, not even an increase in capital per head. . . . Its source must be sought principally in the complex of little understood forces which caused productivity . . . to rise" [1].

These considerations have led some economists to try an alternative approach in which the constraint on $\beta + \alpha$ is retained and a time trend added to the production function so that it takes the form $P = ae^{gt}K^\beta L^\alpha$, where g is some constant rate of growth per year [3] [16]. In this form the function may also be used in a growth model to give a long-term growth rate in output per worker of $\frac{g}{\alpha}$.⁴ But this approach leads to the unhappy consequence that growth in productivity takes place independently of growth in the capital stock. Output per worker rises steadily because of the action of forces—variously referred to as technical change, improvements in organization, improvements in the human factor—outside the system and independently of forces within it. This adaptation of the Cobb-Douglas function to a growth setting entails, in a sense, the sacrifice of a satisfactory explanation of growth itself.

There is a great deal of intellectual discomfort in this dilemma. The function $P = aK$, being a one-factor function, is clearly not salvageable as a helpful tool in the allocation-distribution sphere. Moreover, it can be viewed as a special and limiting case of the function $P = aK^\beta L^\alpha$ where $\beta = 1$ and $\alpha = 0$. But one feels intuitively that the Cobb-Douglas function, with its many theoretical virtues, possesses an underlying logic and ought to serve much better than it does in the realm of growth.

In the discussion that follows, a method is advanced for reconciling the two production functions so that the desirable properties of each, but none of the limitations, are retained. It is shown, in effect, that each function is but a special case of a more general function and of a more general way of viewing the economic process in which recognition is given to the relation between the production function for the enterprise and that for the economy. The approach recognizes the indirect as well as the direct effects of changes in resource inputs and ties both sets of effects to those changes. A main conclusion is that the Cobb-Douglas type of function can hold fully in the allocation realm while the Harrod-Domar type of function can simultaneously hold fully for growth. An ancillary conclusion is that there is no need for or necessary virtue in an aggregate production function that possesses some desired set of allocation-distribution properties.

Some implications of the approach for growth models also are explored and the results of preliminary efforts to apply the approach to historical data are presented. As a by-product of the main discussion,

⁴ A derivation is given in the appendix.

the question of the secular stability of the rate of return to capital also is briefly discussed.

I. *Relation Between the Enterprise and the Aggregate Production Functions*

Let us begin by considering an economy made up of a large number of enterprises, each with a production function of the form:

$$(1) \quad P_i = aHK_i^\beta L_i^\alpha$$

where the subscript i denotes the i th enterprise, and P , K , L , and a are defined as before. As before also $(\beta + \alpha) = 1$. The symbol H , to be referred to as the development modifier, is intended to denote the level of development of the economy in which the enterprise operates and is, for the enterprise, a parameter. Its logic is simple. Enterprises in relatively developed or advanced economies are able to produce more with given inputs of capital and labor than enterprises in relatively underdeveloped economies. This is the essence of economic development. If the number of enterprises in the economy is large, as we assume it to be, then no single one of them can, through its own actions, affect the value of H . The choice of a specific measure or index of H will, for the moment, be left in abeyance.

Suppose that the i th enterprise, a "typical" enterprise, produces some fraction, $\frac{1}{n}$ th, of aggregate output. Then aggregate output can be written:

$$(1a) \quad nP_i = naHK_i^\beta L_i^\alpha$$

Given that all enterprises have production functions identical with the typical enterprise's, and since that function is linear and homogeneous, it follows that production of $\frac{1}{n}$ th of aggregate output, P , requires the

employment of $\frac{1}{n}$ th of the totals of each resource, K and L , so that:

$$(1b) \quad K_i = \frac{K}{n}, \quad L_i = \frac{L}{n}$$

and

$$(1c) \quad nP_i = naH \left(\frac{K}{n} \right)^\beta \left(\frac{L}{n} \right)^\alpha$$

which gives for the aggregate production function:

$$(1d) \quad P = aHK^\beta L^\alpha$$

This aggregation procedure implies an economy in which individual enterprises may vary in size (scale) but employ K and L in the same ratio, which is equal to the economy-wide ratio, and produce output in

the same proportion as they employ factors. The assumptions are restrictive but are not, it may be contended, out of keeping with the traditions of economic theory or unreasonable considering the orientation of the discussion.⁵ Similar results can be obtained under much less restrictive assumptions, but not without encumbering the exposition. (See the appendix, Part A.)

It is convenient at this point to introduce a more specific definition of the development modifier, H . A number of expedients might be used to measure it, like birth or death rates, literacy rates, nutritional levels, levels of per capita income, or levels of capital per worker. Without intending to deprecate any of the other alternatives, let us provisionally choose the last of these, which ranks among the more familiar indexes of

development. Explicitly, let $H = \left(\frac{K}{L}\right)^\gamma$, where the exponent γ is a parameter and gives the expression a more general form.⁶

For the economy as a whole H must be treated as a variable rather than a parameter. Like the other variables in the aggregate function, K and L , it reflects the outcome of the actions of all enterprises. When a single enterprise adds, say, to its capital, the level of development is not significantly affected. But when all enterprises do so, the modifier changes. The aggregate production function may now be written

$$(1e) \quad P = a \left(\frac{K}{L}\right)^\gamma K^\beta L^\alpha \\ = a K^{\beta+\gamma} L^{\alpha-\gamma}.$$

Only one more step is needed to complete our synthesis. Suppose—and the empirical validity of the supposition is considered below (see Section IV)—that $\gamma = \alpha$. Then the aggregate function reduces to

$$(1f) \quad P = aK.$$

The nature of this synthesis can be summarized as follows. Production in the typical enterprise is governed by a function of the form (1). Under these conditions the properties of the Cobb-Douglas function hold fully for the enterprise. As the enterprise varies its factor inputs, say accumulating capital in response to market and other opportunities,

⁵ It may be noted that any linear homogeneous production function lends itself to the method of aggregation employed here. The result is always an aggregate function that mirrors the enterprise function.

⁶ It will be noted that the sum of the coefficients, $\beta + \alpha + \gamma - \gamma$, remains equal to unity. This constraint could be eliminated by putting the modifier into the yet more general form $\frac{K^\gamma}{L^{\gamma'}}$, and this procedure is followed in Section IV and in the appendix. Meanwhile, use of the simpler version in this and the subsequent two sections does not affect the conclusions of the discussion in any essential way.

the modifier shifts. The shifts are exogenous for the enterprise in question and reflect the collective impact of the actions of all enterprises as they respond in similar fashion to economic opportunities. The typical enterprise thus remains "in step" with the economy, continuing to employ factors in the same proportion as the (changing) national average. The upshot is that instead of moving along its production function (1), $P_i = aHK_i^\beta L_i^\alpha$, which is an *ex ante* function, the enterprise moves along a realized function which mirrors (1f), namely $P_i = aK_i$.

Figure 1 depicts this situation. The enterprise's movement is resolvable into two components, one to the right along the *ex ante* function and the other an upward displacement to the realized function.

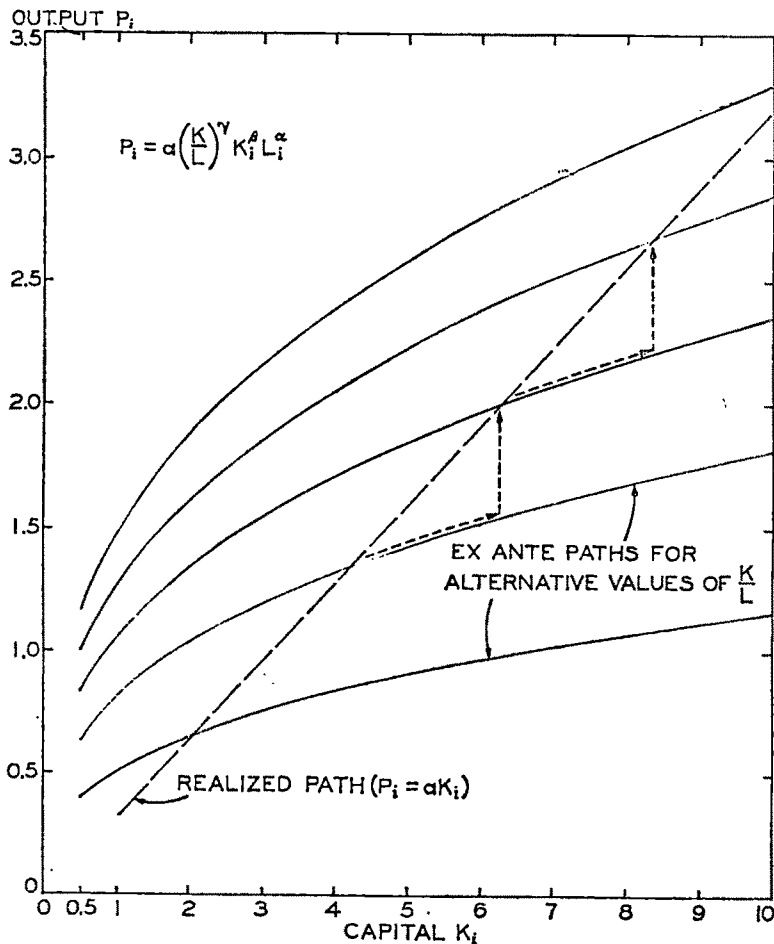


FIGURE 1. *Ex Ante* AND REALIZED PRODUCTION PATHS FOR THE ENTERPRISE WHEN $\gamma = \alpha$ (L_i constant)

It is characteristic of the aggregate function, in which the modifier is a variable, that it internalizes all of the effects on development that are collectively generated by enterprises. Here the term development may be construed broadly to include the several indirect, as distinct from the direct, effects of resource changes. Among these indirect effects are improvements in organization and the quality of labor, technical change, external economies of scale, and better social overhead facilities in the form of transport and communication networks.⁷ As enterprises expand (say) their K_i 's, there is a double impact on the aggregate function: aggregate output rises as a direct result of an increase in one of the factor inputs, and it rises also because the numerator of the modifier has grown. The aggregate function is, in effect, a summation of the realized paths of all enterprises. Provided that $\gamma = \alpha$, the net outcome is as in (1f).⁸

There is no reason to require that an aggregate production function possess properties which accord with our beliefs about the allocation-distribution realm. For it is in the enterprise that factors are employed

⁷ This interpretation is rough. Treatment of H as a parameter for the enterprise implies ignorance by it of all the factors placed in the indirect category. Enterprises will, however, be aware to some extent of these factors and this awareness may play a role in their decisions. This point is treated further in Section III below. An alternative would be to label all factors recognized by the enterprise as direct and all others as indirect. But this treatment would sacrifice any clear distinction among the forces affecting growth and, in mixing the effects from purely quantitative changes in resource inputs with others, would weaken the rationale for using a linear homogeneous production function for the enterprise.

Are the indirect effects neutral or nonneutral in their impact? The answer is that for the *ex ante* enterprise functions they are neutral, for they leave unchanged the relation between the relative marginal productivities of factors and relative factor quantities. But for the aggregate function they are nonneutral.

⁸ The more general point is that any significant departure of γ from zero will result in an *ex ante* relation between inputs and output that is significantly different at the aggregate and the enterprise levels.

The sense in which this approach achieves greater generality differs from that in which the approach of Arrow *et al.* [2] achieve it. The latter drop the assumption of unitary elasticity of substitution, replacing the Cobb-Douglas function by one whose elasticity is constant. This function is then applied at the industry and economy-wide levels in an effort to explain a range of observed data. The present paper proceeds by developing the relation between the micro- and macro-functions. (Although "micro" as here used refers to enterprises, in principle it may denote higher levels of aggregation provided resource allocation decisions at those levels do not by themselves significantly affect the modifier.) The Cobb-Douglas function is retained but is used as a micro-function with one of its parameters, H , dependent on aggregate behavior. The macro-function, which turns out to be different in form from the micro-function, is then developed via the aggregation process. Thus there are two functions, one relevant to the allocation-distribution sphere and the other to the domain of growth.

A synthesis of the enterprise function with the aggregate function $P = aK$ might also be achieved by using, in place of the Cobb-Douglas function, a constant elasticity of substitution function. In general form it may be written $P = (bK^u + cL^u)^{1/u}$ where $u \leq 1$. (See Arrow, *et al.* [2, p. 230], and R. Solow [14, p. 77]. In this case one form of the required modifier, H , would be

$$a \left[b + \left(\frac{K}{L} \right)^{-u} \right]^{-1/u}.$$

and rewards distributed, and here a different, though related, function governs.⁹ By the same token, there is no reason to expect the enterprise function, (1), to give us an accurate account of aggregate growth, since that function accords no recognition to the developmental or indirect effects that enterprises collectively generate. A corollary for growth models is that the production functions employed in them need not possess any particular allocation properties. The use, for example, of a one-factor production function like $P = aK$ may be entirely appropriate and in itself carry no necessary implications, long- or short-run, about the scope for factor substitution and, in so far as it may be related to factor substitution, the equilibrium of the system. Similarly, the use of an aggregate function with nonconstant returns to scale need not carry any implication that factors don't get their marginal products.¹⁰

II. Some Allocation Implications

Consider the marginal products of capital and labor in the enterprise. These take the following form:

$$(2) \quad \frac{\partial P_i}{\partial K_i} = aH\beta K_i^{\beta-1} L_i^\alpha$$

$$(2a) \quad \frac{\partial P_i}{\partial L_i} = aHK_i^\beta \alpha L_i^{\alpha-1}.$$

Let us call these *ex ante* marginal products to distinguish them from a variant to be defined in a moment. As with the Cobb-Douglas function in its more customary form, (2) and (2a) state that the marginal product of either factor varies inversely with its quantity relative to the quantity of the other factor.

Following through on an assumption made earlier that the typical enterprise employs $\frac{1}{n}$ th of each resource so that $\frac{K}{n} = K_i$ and $\frac{L}{n} = L_i$

⁹ It was long ago suggested in connection with the fitting of a production function to cross-sectional data for the manufacturing sector that payments to factors in accord with the marginal products of this function—the interfirm marginal product—did not necessarily imply payments to factors in accord with the marginal products in individual enterprises—intrafirm marginal products. M. W. Reder [12, pp. 262–63]. The reverse proposition in the present article, though its basis is very different, is in principle similar: Payment to factors by enterprises of a wage equal to their marginal products carries with it no necessary implication that factors receive their marginal products as determined from the (historical) aggregate production function.

¹⁰ This is clear if we alter the modifier so that

$$H = \frac{K^\gamma}{L^{\gamma'}} \quad (\text{where } \gamma \neq \gamma') \quad \text{and} \quad P = aK^{\beta+\gamma}L^{\alpha-\gamma'}.$$

The resulting aggregate function may have nonconstant returns to scale even though derived from *ex ante* enterprise functions possessing constant returns to scale.

$\left(\text{and } \frac{K}{L} = \frac{K_i}{L_i}\right)$, then:

$$(2c) \quad \frac{\partial P_i}{\partial K_i} = a \left(\frac{K}{L}\right)^\gamma \beta \left(\frac{K}{n}\right)^{\beta-1} \left(\frac{L}{n}\right)^\alpha = a\beta K^{\beta+\gamma-1} L^{\alpha-\gamma}$$

$$(2d) \quad \frac{\partial P_i}{\partial L_i} = a \left(\frac{K}{L}\right)^\gamma \left(\frac{K}{n}\right)^\beta \alpha \left(\frac{L}{n}\right)^{\alpha-1} = aK^{\beta+\gamma} \alpha L^{\alpha-\gamma-1}.$$

Call these realized marginal products, or perhaps better realized payment functions, to distinguish them from the previous set. The *ex ante* marginal product functions, like the *ex ante* production function, describe the results expected by the enterprise if, with all else unchanged, it varies the quantity of either factor. They relate to what the enterprise "sees" when it contemplates a change in factor proportions. They also indicate what will result if in fact all else remains unchanged. By contrast, the realized payment functions indicate the outcome when the enterprise makes only such changes in factor proportions as keep it "in step" with the economy as a whole—that is with the national average.

This is implicit in the substitution of $\frac{K_i}{L_i}$ for $\frac{K}{L}$. Stated differently, the realized payment functions describe the outcome for the typical enterprise when *all* enterprises seek to move along their *ex ante* marginal product functions. No one enterprise can, through its own actions, affect the development modifier, H , and it is on this supposition that each enterprise (rightly) makes, say, its investment decisions. But when all enterprises accumulate capital, the modifier will change and the realized and *ex ante* outcomes will differ. In this way enterprise production and marginal product functions shift or are transformed, as the economy accumulates capital and alters the proportions in which it employs factors.

Taking again the case where $\gamma = \alpha$, our realized payment functions reduce to

$$(2e) \quad \frac{\partial P_i}{\partial K_i} = a\beta$$

$$(2f) \quad \frac{\partial P_i}{\partial L_i} = aK\alpha L^{-1} \left(\text{or alternatively, } \frac{\partial P_i}{\partial L_i} = aK_i\alpha L_i^{-1}\right).$$

Here labor's return rises more sharply in response to a relative increase in capital than is true of the *ex ante* function. Should capital increase more rapidly than labor, as historically it has, the resulting rise in the real wage rate would be greater than the *ex ante* function indicates. The case

of capital is perhaps more interesting, for it is seen to be constant and independent of relative factor quantities. If one enterprise alone were to add to its capital, it would encounter diminishing returns to that factor. But when all do so, all are beneficiaries of compensatory shifts in the modifier. Figure 2 describes this situation.

There is in this outcome more than a suggestion of observed experience. During the past three-quarters of a century, perhaps much longer, real wage rates have persistently forged upward in the United States as well as some other Western countries. By contrast profit rates, while undergoing wide oscillations, have not exhibited a marked secular

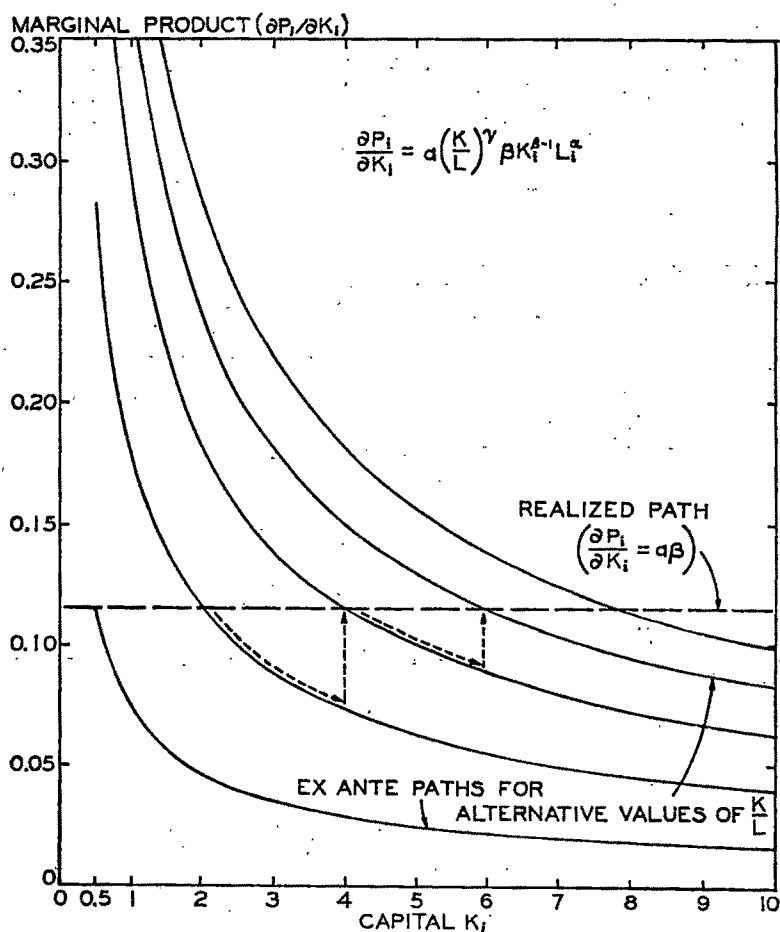


FIGURE 2. *Ex Ante* and REALIZED MARGINAL PRODUCT PATHS
FOR THE ENTERPRISE WHEN $\gamma = \alpha$
(L_i constant)

trend.¹¹ It may be worth noting further that the magnitude of the realized marginal product of capital, as implied by (2e) is within reasonable limits. From (1f) a may be interpreted as the output-capital ratio, a plausible value for which might be .33. Data on capital's share in the national product suggest for the United States a figure for β of perhaps .35. Hence $a\beta$ would equal about 11.5 per cent.

For the aggregate function, (1f) $P = aK$, the marginal products are very different:

$$(2g) \quad \frac{\partial P}{\partial K} = a$$

$$(2h) \quad \frac{\partial P}{\partial L} = 0.$$

These marginal products, like the aggregate function itself, have no meaning for enterprises. Perforce each enterprise makes its decisions in terms of its own *ex ante* function. To a central planner, however, the aggregate function and its derivatives would appear as the *ex ante* functions.¹² Giving recognition to the developmental or indirect effects flowing from changes in factor inputs by enterprises, he would observe a much higher marginal product for capital and a much lower one—zero—for labor. He might rightly decide that the national product would benefit far more from policies stressing higher investment than those emphasizing higher population growth or labor-force participation rates. To him the output-capital ratio would be the true measure of capital's contribution, even though the excess of this figure over $a\beta$, the amount paid to capital by enterprises, accrued wholly to labor.¹³ Similar considerations might, other things equal, lead him to an autarkic position that favored domestic over foreign investment. For investment abroad by domestic enterprises would yield them only the direct return on capital, while investment at home would cause both the direct and indirect benefits to accrue to domestic factors. More simply, investment

¹¹ For the United States, see I. Kravis [9, Table 10, Cols. 8 and 9] who gives estimates of the yield on reproducible assets and total wealth. For Great Britain the yield on consols, for Germany the return on bonds, and for France the yield on securities might be taken as indicative. See [10, charts 53-56] [17, p. 46].

¹² They also would appear to the planner as realized functions, descriptive of the actual outcome when inputs are varied.

¹³ It may be well at this point to note an implication of a modifier of the form K/L . It implies that the level of development, as we have called it, is reversible and will decline if growth in the labor force exceeds that in capital. There may be some truth in this for some underdeveloped economies. But it is probably not a valid assumption for industrialized economies. Having reached a relatively advanced level of development it seems unlikely that such economies would fall away from it under the conditions noted. Accordingly, one might wish to constrain K/L by specifying its movement as monotonic.

abroad raises the level of development abroad, whereas investment at home raises it at home.

III. A Qualification and Extension

The approach we have taken depicts the typical firm as being pushed—from behind, as it were—to successively higher production functions. The firm never anticipates any of the forces that are, in effect, summarized by parametric changes in the modifier, and hence it never foresees the path along which it will actually move. This view is an oversimplification. Firms will at times, in conjunction, say, with changes in their resource inputs and the associated adoption of new technologies, see themselves as moving upward to new production functions and anticipate, to one or another extent, their realized paths of movement. Their experience is a blend of the foreseen and the unforeseen. Hence the question arises whether the approach we have taken is consistent with the possession by firms of partial or complete foreknowledge of their realized production paths.

Suppose the typical firm which, as before, keeps in step with the economy, anticipates its realized path fully. Then its *ex ante* and realized paths will be the same, and it will see its production function not as:

$$(1) \quad P_i = aHK_i^\beta L_i^\alpha$$

but as:

$$(3) \quad P_i = aK_i^{\beta+\gamma} L_i^{\alpha-\gamma}$$

where $K = nK_i$ and $L = nL_i$. When as in Section I we let $\gamma = \alpha$, this becomes simply $P_i = aK_i$.

Its *ex ante* marginal product functions will be the derivatives of (3). Thus for capital the function will be:

$$(3a) \quad \frac{\partial P_i}{\partial K_i} = a(\beta + \gamma)K_i^{\beta+\gamma-1} L_i^{\alpha-\gamma}$$

which may be rewritten approximately:

$$(3b) \quad \frac{\partial P_i}{\partial K_i} = aH(\beta + \gamma)K_i^{\beta-1} L_i^\alpha$$

This last expression differs from the corresponding one for firms without foresight, as given in (2), by the inclusion of γ within the parentheses on the right-hand side.

The production function of the firm with foresight, which is both an *ex ante* and a realized function, gives us no basis by itself for inferring the realized payment functions. There is no necessary connection between the firm's foreseeing its realized production path and foreseeing

its realized payment paths. It may, for example, be aware of and give due recognition to technological changes in its investment decisions and it may even take notice of certain concurrent environmental changes, such as the construction of an improved and cheaper transport network that will be available for its use. But its foresight in these respects does not insure foresight with respect to the realized payment functions—that is, with respect to the outcomes in economy-wide or region-wide factor markets; nor need it affect in a consequential way the outcomes in those markets.

An alternative approach to the problem is to suppose that the enterprise, besides anticipating the indirect effects, anticipates also that their contribution to higher profits will be lost through the forces of competition. This approach permits results identical to those obtained when foresight is assumed to be absent.

Accordingly, the case of foresight does not lead logically to or call for realized payment functions different from those applicable in the case without foresight, namely expressions (2c) and (2d). Payment in accord with these expressions is consistent with both cases and, for both, causes aggregate factor payments exactly to exhaust total product.

To summarize, the line of argument developed in Sections I and II and based upon a typical firm without foresight may be extended to cover the alternative of a typical firm with foresight. The approach taken toward the firm and its production function does not require that managers be completely blind to the forces denoted by the modifier. Possession of some foresight by them is consistent with the same set of realized outcomes presented earlier. Movement by the typical firm along the realized production function, whether the firm foresees the movement or not, may be thought of as the outcome of movement along a linear homogeneous production function that is undergoing transformation; and movement by such a firm along the realized payment functions may be thought of as the outcome of a movement along the derivatives of the same linear homogeneous production function, with the derivative functions undergoing an identical transformation.

IV. *Some Implications for Growth*

A. *The Aggregate Production Function*

The implications for growth of an aggregate production function that incorporates a modifier differ in important ways from those of a similar function in which the modifier is omitted or one in which, instead of the modifier, a time trend is employed. This much is true whether one considers the production function in isolation or as an ingredient in a growth model. Consider first a function of the form $P = ae^{\sigma t} K^{\theta} L^{\alpha}$, where the term $e^{\sigma t}$ describes a time trend that causes output to grow at the rate

g per year. A function of this form has been fitted by Solow [16] to U. S. data for the years 1900-1949, with the results, $g = .015$, $\beta = .35$, $\alpha = .65$. Differentiating with respect to t , dividing by P and substituting these numerical values gives:

$$(4) \quad \frac{P}{P} = .015 + .35 \frac{\dot{K}}{K} + .65 \frac{\dot{L}}{L}.$$

If the quantities of capital and labor employed are constant, output will grow at 1.5 per cent per year. An annual increase of 1 per cent in the stock of capital will raise the rate of growth of output by an additional .35 percentage points, while a 1 per cent increase in the employed labor force will raise it by .65 of a point.

One may be led by this kind of analysis to the conclusion that increases in capital, and hence the rate of investment, do not exercise much influence on the rate of growth in output.¹⁴ The finding that a 1 per cent increase in capital causes output to grow by only about one-third of one per cent stands in sharp contrast to the rather popular view, conditioned and supported by growth models of the Harrod-Domar variety, that output will grow at about the same rate as the growth in capital.

This depressing conclusion about the efficacy, or lack thereof, of investment is sometimes reached by a different but nonetheless related route. Data for the U. S. (private domestic) economy, over the period 1889 to 1957, indicate about a ninefold rise in real output. In the same interval tangible capital rose a little over four times and hours of labor about one and a half times, while the weighed total input of labor and capital combined increased only a little over two times.¹⁵ The figures suggest that increases in capital and labor account for only a fraction of the increase in output and that the contribution of capital alone, when allowance is made for the fact that it represents but a third by weight of value added, has been almost negligible. This approach is, in an essential way, analogous to that which makes output dependent on a Cobb-Douglas function adjusted by a time trend or which fits such a function to historical data. Any increase in output not matched by an equivalent increase in the weighed inputs combined tends to be ascribed to the influence of outside forces unrelated to the resource inputs. The assumptions, of course, constrain the conclusions.

¹⁴ "It seems that the rate of growth which can be attained in a modern industrial economy is not strongly influenced by the investment policy which is applied. Whether investments are high or low, within reasonable limits, national product will increase by 2-3 percent a year, if the volume of employment remains constant. This is mainly because the human factor alone (*i.e., time trend*) is sufficient to ensure a growth of 1.5 percent a year" [3, p. 49]. Aukrust's statistical application was to Norwegian data. His statement assumes an average (and constant) capital-output ratio of 3.5 and a rate of net investment ranging from about 5 to 20 per cent.

¹⁵ Solomon Fabricant [5, Table A]. The data are John W. Kendrick's.

By contrast, consider the aggregate function

$$(1e) \quad P = a \frac{K^\gamma}{L^{\gamma'}} K^\beta L^\alpha$$

where the modifier is given a more general form than in earlier discussion. This formulation does not in itself explain the indirect effects any more than does a time trend. But it differs in two related respects from the latter approach. First it ties the indirect to the direct effects. The indirect effects are implemented through resource changes rather than materializing independently of them. Second, it carries quite different implications about the effects on growth of an increase in a resource like capital.

Differentiating (1e) with respect to time and dividing by P gives:

$$(4a) \quad \frac{P}{P} = \gamma \frac{\dot{K}}{K} + \beta \frac{\dot{K}}{K} + \alpha \frac{\dot{L}}{L} - \gamma' \frac{\dot{L}}{L}.$$

A change in a resource input here has two effects, one direct and the other indirect. Depending on the sign and magnitude of γ and γ' , the indirect effects may either amplify or diminish the direct effects. In the special case, for example, in which $\gamma = \alpha$, a one per cent increase in capital will result in a one per cent increase in output. In this case, and it is a meaningful one, for it conforms rather well to U. S. data for the period 1889 to 1933 (see below, p.1012), investment remains a strategic element in the growth picture.

B. *Growth Models*

The use in a Harrod-Domar type of growth model of a production function with a modifier opens up a number of interesting possibilities some of which have empirical relevance. Let us limit our attention to the following model which differs from one of general familiarity only in the production function that is used:

$$(5) \quad P = aHK^\beta L^\alpha$$

$$(5a) \quad P = C + I$$

$$(5b) \quad I = \frac{dK}{dt} = K$$

$$(5c) \quad C = (1 - s)P$$

$$(5d) \quad L = L_0 e^{\lambda t}$$

$$(5e) \quad H = \frac{K^\gamma}{L^{\gamma'}}.$$

The variables P , K and L have the same meanings as before. The variable I should be understood as denoting net investment, since assets are assumed to be perpetual. The variable C denotes consumption in real terms, the parameter s the net savings ratio, the parameter L_0 the labor force in the initial year, and the parameter λ some constant growth rate of the labor force. The modifier, $H = \frac{K^\gamma}{L^{\gamma'}}$, can be multiplied through in (5) to give for that equation:

$$P = aK^\theta L^\phi, \text{ where } \theta = \beta + \gamma \text{ and } \phi = \alpha - \gamma'.$$

The system of equations can be solved to get the time paths of the variables and their rates of growth. (Part B of the appendix sets forth the procedure.) For the growth rate of output we have

$$(5f) \quad \frac{P_t}{P_t} = \frac{\theta \lambda \phi a s L_0^\phi e^{\lambda \phi t}}{\lambda \phi K_0^{1-\theta} - (1-\theta) a s L_0^\phi + (1-\theta) a s L_0^\phi e^{\lambda \phi t}} + \lambda \phi$$

where $(\theta + \phi) \geq 1$ and $\theta \neq 1$. For $\theta = 1$ the result is

$$(5g) \quad \frac{P_t}{P_t} = a s L_0^\phi e^{\lambda \phi t} + \lambda \phi.$$

In the special case in which the modifier raises the exponent of K to unity and reduces that of L to zero, so that $\theta = 1$, $\phi = 0$ and $P = aK$, we get for (5g):

$$(5h) \quad \frac{P_t}{P_t} = a s.$$

The growth rate is constant and proportionate, being the product of the output-capital ratio and the savings ratio.

Two other cases, more general than the preceding special case, are of interest. Though ordinarily disregarded, they become relevant, as does the special case, when the influence of the modifier is taken into account. Consider first the case where $(\theta + \phi) = 1$ and where θ is relatively large so that ϕ must be relatively small. Then in the very long run the first two terms in the denominator of (5f) become negligibly small and the expression reduces to

$$(5i) \quad \frac{P_t}{P_t} = \frac{\theta \lambda \phi}{1 - \theta} + \lambda \phi = \lambda.$$

The long-run growth rate of output is equal to the growth rate of the labor force, which is a familiar result. Now, however, with θ relatively

large, it is meaningful to ask, How long is the long run? Clearly if θ and ϕ are in the neighborhoods of unity and zero respectively, the outcome ought, at least for a time, to approximate that of the special case (5h), and the savings-investment ratio should be influential during this period. Figure 3, based on equation (5f), illustrates some results for alternative values of θ and ϕ . Growth in the labor force, λ , is taken to be .015 per year. Alternate values of .20 and .10 are assumed for the rate

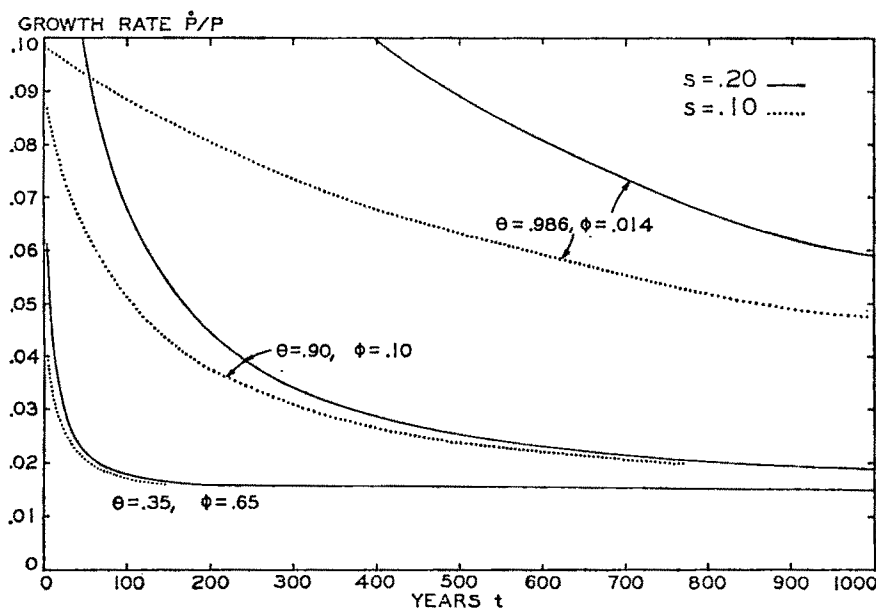


FIGURE 3. TIME PATHS OF THE GROWTH RATE OF OUTPUT,
GIVEN ALTERNATIVE VALUES FOR θ , ϕ AND s
(a , K_0 and L_0 equal 1)

of saving (equal to the rate of investment), s , while the value of unity is arbitrarily assigned to a , K_0 and L_0 .

In all cases the long-run growth rate in output is the same, .015. However, the movement toward this position occurs at disparate rates. When θ and ϕ take respective values of .35 and .65—which might be thought of as the case in which there is no modifier—the growth rate falls very rapidly toward the .015 level, for all practical purposes reaching it within 100 years. Variation in the rate of investment is significant in the early stages, but this influence rapidly diminishes, all but disappearing within 40–50 years.

As θ rises and ϕ falls, the .015 level is approached more slowly and the rate of investment remains influential for a longer time. With $\theta = .95$, $\phi = .05$ (not shown) the growth rate is still above the .015 level even after

1,000 years, and variation in the rate of investment retains significance for growth for perhaps 200 to 300 years. The results are yet more dramatic for higher values of θ .

The values of .986 for θ and .014 for ϕ are included because (together with a value of α of .321) they represent one set of results for regression analysis as applied to U. S. data for the period 1889–1933.¹⁶ A more extended period running into the fifties might have been selected, but the data do not appear homogeneous for so long a span.¹⁷ The correlation coefficient was .977. If we assign to β and α respective values of .35 and .65 to accord approximately with the distributive shares of capital and labor, then in the context of the approach developed in this paper the regression results imply for the aggregate production function:¹⁸

$$(5j) \quad P_t = .321 \left(\frac{K_t}{L_t} \right)^{.636} K_t^{.35} L_t^{.65}.$$

This case is explored further in Figure 4, but this time, instead of unity, the observed values are used for K_0 and L_0 and the regression-determined value is used for α . A rate of saving of 4.7 per cent is just sufficient to sustain a steady rate of growth at the long-term level of 1.5 per cent. Higher rates of saving generate initial growth rates that

¹⁶ The data are taken from Kendrick [8] Appendix A, Tables III, X, XV relating respectively to gross domestic product, man-hours (civilian) and capital stock (structures, equipment and inventories). The data were first smoothed by means of a moving average. A justification for this or some similar procedure is that the adjustment of these variables to one another is slow, that the relations among them make themselves felt only over the intermediate and longer term, and that the influence of short-term random and cyclical movements that tend to obscure the relations sought should be minimized. A second regression using unadjusted data did not, however, produce markedly different results.

¹⁷ The line of relation between P and K/L moves in a comparatively smooth and steady way until the early thirties and then evidences a definite break. Subsequent movement is along a different path that rises more sharply than in earlier years. Lack of homogeneity as between the pre- and post-'33 periods is reflected also in the behavior of the ratio K/L . It rises continuously through 1933 but then reverses direction and continues downward through 1943. Thereafter it rises steadily, though it does not regain its 1933 level until 1954.

¹⁸ Taking $\gamma = \gamma'$, the function may first be written

$$P_t = a \left(\frac{K_t}{L_t} \right)^\gamma K_t^\beta L_t^\alpha = a K_t^{\beta+\gamma} L_t^{\alpha-\gamma}.$$

Dividing through by L_t gives

$$\frac{P_t}{L_t} = a \left(\frac{K_t}{L_t} \right)^\theta \quad \text{where } \theta = \beta + \gamma.$$

This function was fitted to the series on output, capital and employment referred to in footnote 16. One would expect the fitting of a production function to cross-sectional data to yield different results from those given here, since in that case the level of development and hence the modifier would be held constant. In so far as an aggregate production function has meaning, one might argue, contrary to the customary belief, that it is the historical rather than cross-sectional function that is valid. For unlike the enterprise, the economy cannot alter its resource inputs without generating indirect effects and hence changing the modifier.

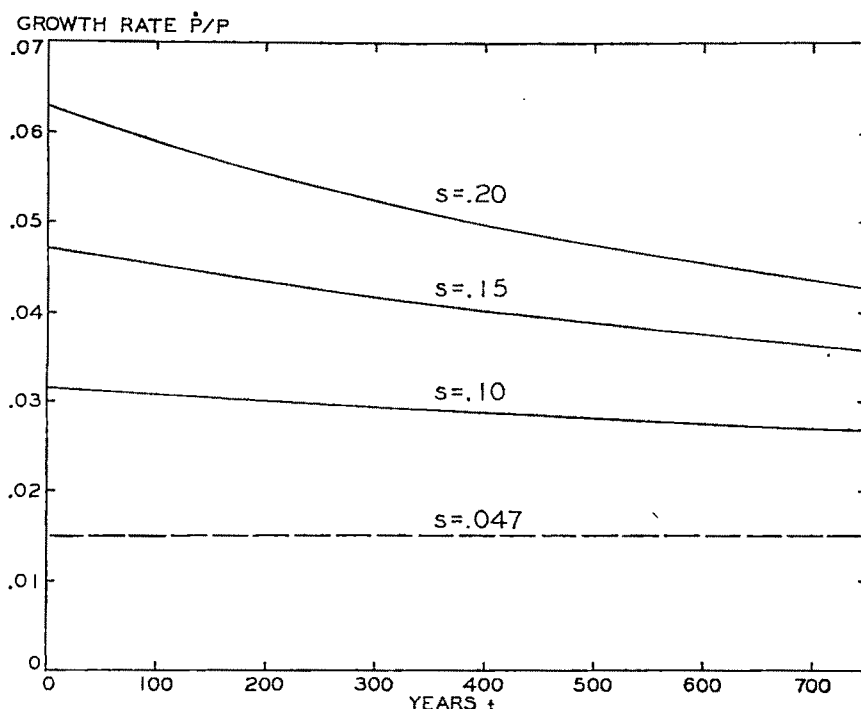


FIGURE 4. TIME PATHS OF THE GROWTH RATE OF OUTPUT, GIVEN THE PRODUCTION FUNCTION $P = .322K^{.986}L^{.014}$ AND ALTERNATIVE VALUES OF THE SAVINGS RATIO (s)

are higher and that decline with almost imperceptible slowness toward the long-term rate. Lower rates (not shown) result in initial growth rates below the long-term rate that rise with equal slowness toward it. The growth rate is, for all practical purposes, as sensitive to the rate of investment as in the case where $P = aK$.

Regression analysis covering the later years 1944–54¹⁹ resulted in a somewhat lower value for θ of .89 and a higher value for ϕ of .11. (The value for the α coefficient was .91). The period covered is unfortunately quite short. An idea of the growth implications of this outcome can be gleaned from the approximating case in Figure 3 for $\theta = .90$, $\phi = .10$.

A second case of interest is that where $\theta + \phi$ is not constrained. The long-run growth rate of output is:

$$(5k) \quad \frac{\dot{P}}{P} = \frac{\theta\lambda\phi}{1 - \theta} + \lambda\phi$$

¹⁹ Selection of any earlier initial year for the post-1933 era would have involved the inclusion of years in which the ratio K/L was moving downward. Such years were excluded on grounds that the influence of the modifier is not reversible, at least not in any simple fashion. Once any given level of development has been achieved, it seems unlikely that it would be reduced by a slowing in the growth of the capital stock below that in the labor force.

which now will be greater than λ except when $\theta > 1$.²⁰ Regression analysis for the 1889–1933 period, applied this time without imposing any constraints on $(\theta + \phi)$, gave $\theta = .76$, $\phi = .55$, $a = .09$, with a correlation coefficient of .998. Assigning values to β and α that are approximately equal to the shares of capital and labor in the national product, our implied production function is:

$$(5l) \quad P_t = .09 \frac{K_t^{.41}}{L_t^{.10}} K_t^{.35} L_t^{.65}.$$

For the years 1944–54 regression analysis gave for the parameters:

$$\theta = .92, \phi = .29, a = .19.$$

Limiting attention to the 1889–1933 interval and using the regression-determined values for θ and ϕ in the production function of our growth model, we obtain from (5k) a long-run growth rate of 3.3 per cent, which is more than double the growth rate of the labor force. Figure 5 illustrates the case, once more using observed values for K_0 and L_0 and the regression-determined values for the other parameters. A rate of saving of about 11 per cent yields a growth rate from the outset just equal to the long-term rate. At higher rates of saving the growth rate approaches the long-term rate from above, while at lower rates the long-term rate is approached from below. The rate of saving retains significance for a much shorter period than in Figure 4. Still, it remains as a force to be reckoned with for perhaps 150 to 200 years, a period which is long relative to the span of about 65 years covered by the data.

Given the kind of setting portrayed in Figures 4 and 5, with all of their underlying assumptions, one's judgment on the current importance of the rate of investment for growth depends on where on the time scale one places the present U. S. economy. There is no necessary implication in this kind of analysis that, whatever the economy's present position, it must eventually be dominated by the long-term outcome. Structural changes of one or another sort, discontinuities in the flow of technological change or some other circumstance may from time to time shift the values of one or more parameters, thereby restoring the *status quo ante* and with it the influence of investment. In statistical terms this is to say that the subperiods comprising any extended period may not all be homogeneous.²¹

²⁰ When $\theta > 1$ the first term on the right becomes negative. The long-run rate of growth will then be lower than λ and may be negative.

²¹ It is not claimed of the regression findings offered here that they are either the right ones or the best ones. The data can and have been approached in different ways by different observers, with a variety of results. Moreover, the hazards of correlating time series are well known and the results inherently suspect. Interest in the present findings derives less from any worth they may have as statistics than from their value as a supplement to the main ideas offered in this paper.

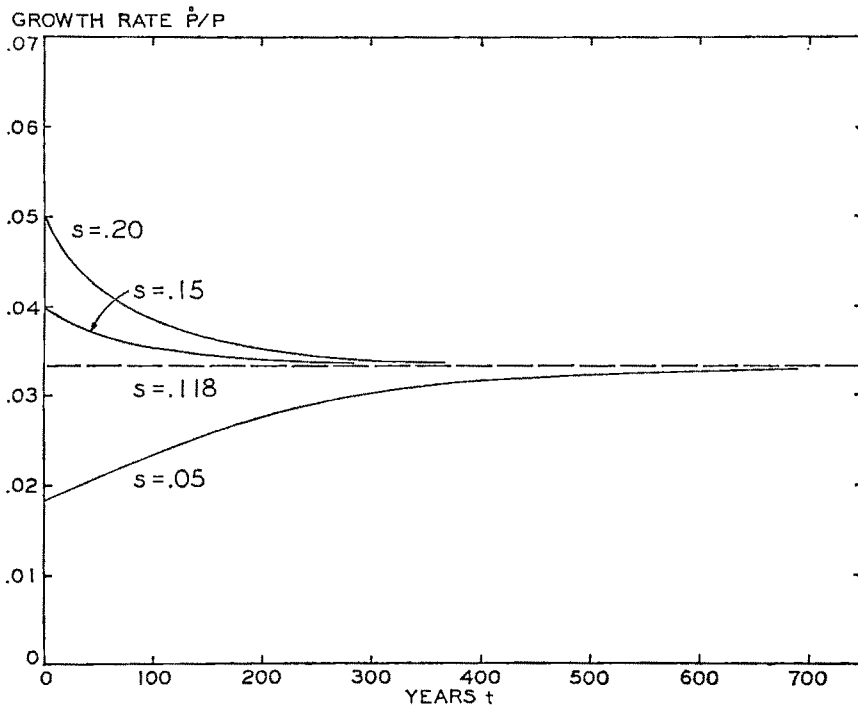


FIGURE 5. TIME PATHS OF THE GROWTH RATE OF OUTPUT, GIVEN THE PRODUCTION FUNCTION $P = .089K^{.76}L^{.55}$ AND ALTERNATIVE VALUES OF THE SAVINGS RATIO (s)

In discussions of economic growth the question occasionally arises whether, as an economy matures, there is any tendency for the growth rate to decline. In so far as a long-run terminal rate has any practical meaning, Figure 5 suggests that the approach to it may be either from above or from below, depending on the economy's point of departure. For some economies, therefore, the passage of time may bring a rising growth rate while for others it may bring a decline. In yet other cases it may vary little or not at all.

V. *Some Qualifications and Caveats*

In the writer's view production functions, when used with reference to the typical enterprise or the whole economy, are at best useful fictions. They may suggest underlying reality but can hardly be expected to replicate it. The particular production function and modifier used in the preceding pages as the basis for formal analysis must be understood in this light. Their choice, moreover, is provisional and not necessarily optimal and is not intended to exclude the consideration of other possibilities.

Functions other than the Cobb-Douglas function may be better

suit to the needs both of theory and practice. Two properties of the Cobb-Douglas function are perhaps unduly limiting. One of these is an elasticity of substitution equal to unity. This property has been central to explanations, via an aggregate production function, of an apparent stability in the United States and other countries of labor's share in the national product. The results of recent studies of the data differ as to whether stability in fact has prevailed (cf. [9 *passim*] [13, pp. 196-99]). In any event, it is a contention of this paper that answers to questions concerning income distribution, if they are to be sought in production functions, are better sought at lower levels of aggregation. When one turns to the enterprise and considers the wide diversity among enterprises, both cross-sectionally and over time, in their ability to substitute productive factors for one another, the unitary elasticity assumption seems rather restrictive. One would prefer the greater flexibility of a function whose elasticity might vary from zero upwards, even though this required looking elsewhere for any needed explanation of share stability.²²

A second restrictive property of the Cobb-Douglas function, less consequential than the preceding one, is the requirement that both capital and labor be used in production. Here too greater flexibility would permit accommodation to a wider range of experience. The extremes of the fully automated plan and the use in production of labor alone ought not to be ruled out.

A function of the form $P = (bK^u + cL^u)^{1/u}$, (where $u \leq 1$), is one possible answer [14, p. 77] [2]. This function preserves the features of linearity and homogeneity which, like the other restrictive features of the Cobb-Douglas function, also represent an oversimplification. But on balance they are probably desirable features, for they help to fulfill some theoretical needs and to minimize mathematical complexity. A second possible answer may lie in the use not of a single function but of a set of functions each of which is intended to describe a class of enterprises sharing common characteristics. The mathematics of such an approach are likely to be difficult. But if analytical techniques did not suffice, something might be done with Monte Carlo methods.

Improvement in the modifier, as in the production function proper, also is a distinct possibility. A modifier of the form $\frac{K}{L}$ has the virtue of being simple and of lending itself to an easy economic interpretation. These are useful qualities but they do not alone ensure analytical and empirical adequacy. In principle there is no reason why a term that de-

²² In Appendix A, however, less restrictive assumptions are used in aggregation than are used in Section I. As a result, returns to scale can vary among enterprises and individual elasticities of substitution need not equal unity.

scribes how the production function is transformed need be simple or susceptible of ready economic interpretation. The modifier purports to summarize the indirect effects of quantitative changes in resource inputs. Such effects are varied and include technological change, changes in organization, changes in the contribution of social overhead capital, changes in the quality of labor inputs, and external economies of scale. It is an obvious limitation on the modifier used in this paper that it does not distinguish among these effects. It is also an obvious and related limitation that some of these indirect effects may in fact make themselves felt at times without being accompanied by changes in factor inputs,²³ though adjustments in the concepts of an measuring rods for capital and labor might help to remedy this neglect.

Other types of modifiers might well be developed that would be stronger in these respects and that would meet more efficiently the tests of theory and data. It is worth emphasizing that with modifiers, perhaps more so than with production functions, no single form may suffice to fit all the facts. What works well for one economy over a given period of time may not serve well for a different period or a different economy. A deeper understanding of differences, temporal and regional, in economic development may perhaps come from a fuller knowledge of the forms which modifiers may reasonably be expected to take.

REFERENCES

1. M. ABRAMOVITZ, *Resource and Output Trends in the United States Since 1870*. Nat. Bur. Econ. Res. Occas. Paper 52. New York 1956.
2. KENNETH ARROW, H. B. CHENERY, BAGICHA MINHAS AND R. M. SOLOW, "Capital-Labor Substitution and Economic Efficiency," *Rev. Econ. Stat.*, Aug. 1961, 43, 225-50.
3. O. AUKRUST, "Investment and Economic Growth," *Productivity Measurement Rev.*, Feb. 1959, No. 16, pp. 35-50.
4. P. H. DOUGLAS, "Are There Laws of Production?," *Am. Econ. Rev.*, March 1948, 38, 1-41.
5. SOLOMON FABRICANT, *Basic Facts on Productivity Change*. Nat. Bur. Econ. Res. Occas. Paper 63. New York 1959.
6. G. T. GUNN AND P. H. DOUGLAS, "Further Measures of Marginal Productivity," *Quart. Jour. Econ.*, May 1940, 54, 399-421.
7. LEIF JOHANSEN, "Substitution versus Fixed Production Coefficients in the Theory of Economic Growth: A Synthesis," *Econometrica*, Apr. 1959, 27, 157-76.

²³ A way of overcoming this problem is by an approach that introduces the indirect effects through a replacement function. Technological change has been handled in this way by Leif Johansen [7] and by R. M. Solow [15]. In the present case, our model in Section V might be expanded to include a replacement function, and the modifier might then be made to depend in some fashion on both the level of the capital stock and its age structure as determined by the rate of replacement.

8. J. W. KENDRICK, *Productivity Trends in the United States*. Princeton 1961.
9. IRVING KRAVIS, "Relative Income Shares in Fact and Theory," *Am. Econ. Rev.*, Dec. 1959, 49, 917-49.
10. OSKAR MORGENSTERN, *International Financial Transactions and Business Cycles*. Princeton 1959.
11. E. H. PHELPS BROWN, "The Meaning of the Fitted Cobb-Douglas Function," *Quart. Jour. Econ.*, Nov. 1957, 71, 546-60.
12. M. W. REDER, "An Alternative Interpretation of the Cobb-Douglas Function," *Econometrica*, July-Oct. 1943, 11, 259-64.
13. ———, "Alternative Theories of Labor's Share," in M. Abramovitz and others, *The Allocation of Economic Resources*, Stanford 1959, pp. 196-99.
14. R. M. SOLOW, "A Contribution to the Theory of Economic Growth," *Quart. Jour. Econ.*, Feb. 1956, 70, 65-94.
15. ———, "Investment and Technical Progress," in K. J. Arrow, Samuel Karlin and P. C. Suppes, editors, *Mathematical Methods in the Social Sciences*. Stanford 1959.
16. ———, "Technical Change and the Aggregate Production Function," *Rev. Econ. Stat.*, Aug. 1957, 39, 312-20.
17. *Lloyds Bank Rev.*, July 1959, No. 53, p. 46.

APPENDIX

A. *The Relation Between Enterprise and Aggregate Production Functions*

For illustration, let the economy consist of three enterprises to be designated by the subscripts j , k , and l . Neglect the modifier for the present. Let the production function of the j th enterprise be

$$(A1) \quad P_j = a_j K_j^{\beta_j} L_j^{\alpha_j}$$

where $P_j = jP$, $K_j = j'K$ and $L_j = j''L$, P , K , and L are the corresponding macro-variables, $j \geq j' \geq j''$ and $0 < (\beta_j + \alpha_j) \leq 1$. Represent the production functions of the k th and l th enterprises in parallel fashion, with

$$j + k + l = j' + k' + l' = j'' + k'' + l'' = 1.$$

Thus a given enterprise may employ different fractions of the totals of each resource and produce a yet different fraction of total output, and it may have increasing, constant or decreasing returns to scale. Substituting the macro- for the micro-variables in each function and expressing each in logarithmic form and summing over all enterprises gives:

$$\begin{aligned} 3 \log P + \log j + \log k + \log l &= \log a_j + \log a_k + \log a_l + \beta_j \log j' \\ &\quad + \beta_k \log k' + \beta_l \log l' + \alpha_j \log j'' \\ &\quad + \alpha_k \log K'' + \alpha_l \log L'' \\ &\quad + (\beta_j + \beta_k + \beta_l) \log K \\ &\quad + (\alpha_j + \alpha_k + \alpha_l) \log L. \end{aligned}$$

Transposing, taking the antilog and rearranging terms gives

$$(A2) P = \left(\frac{a_j a_k a_l (j')^{\beta_j} (k')^{\beta_k} (l')^{\beta_l} (j'')^{\alpha_j} (k'')^{\alpha_k} (l'')^{\alpha_l}}{j k l} \right)^{1/3} K^{(\beta_j + \beta_k + \beta_l)/3} L^{(\alpha_j + \alpha_k + \alpha_l)/3}.$$

Let the first term on the right, which is some constant term, equal a . Let the arithmetic averages of the exponents for capital and labor equal, respectively, β and α . Assume that $\beta + \alpha = 1$, which is less restrictive than assuming the equivalent for each enterprise. Then the resulting linear homogeneous production function is

$$(A3) \quad P = a K^{\beta} L^{\alpha}.$$

This procedure can be extended from an economy of three enterprises to one that covers any number of enterprises.

It is clear that the fractions of resources used and output produced and the extent of economies or diseconomies of scale in each enterprise need not remain constant over time in order that the aggregate function remain stable. All that is required is that the a term and the average of each exponent remain stable, and this stability can prevail if there are compensating changes of various kinds within and among enterprises.

The inclusion of the modifier H in each enterprise function would result in its inclusion also in the aggregate function so that:

$$(A4) \quad P = a H K^{\beta} L^{\alpha}.$$

A less restrictive treatment also is possible by providing that enterprises may be affected by the modifier—or experience the indirect effects of resource changes—in differing degrees. Defining H_j as the modifier applicable to the j th enterprise, we may write

$$H_j = j''' \frac{K^{\gamma_j}}{L^{\gamma_j'}}$$

where j''' , γ_j and γ_j' are the relevant constants for this enterprise. Other enterprises may be treated similarly. The effect on the aggregate function (A4) would be to alter a by the multiplicative inclusion in the numerator of the bracketed term of (A2) of $(j''' k''' l''')$. It would result also in defining γ and γ' (in $H = K^{\gamma}/L^{\gamma'}$) as the respective arithmetic averages of the corresponding parameters for the enterprises.¹

In short, it is possible to develop an aggregate production function of the kind in (A4) by assuming only the form taken by each enterprise's production function. Returns to scale need not be constant for the enterprise, nor need the indirect effects be the same among enterprises.

Let us now define a typical enterprise as that hypothetical i th enterprise

¹ A variant of this approach would be to develop the modifier term directly from each enterprise's micro-variables instead of assuming it initially. This would involve specifying, first, the quantitative relation between an enterprise's micro-variables and the corresponding macro-variables, and second, the relation between the macro-variables and the indirect effects for the enterprise.

which employs $1/n$ th of each resource and produces $1/n$ th of total output, and which has a production function of the same form and parameters identical with those in (A4), so that

$$(A5) \quad P_i = aHK_i^\beta L_i^\alpha.$$

As was shown in Section I, aggregating over an economy of such enterprises yields the aggregate function (A4). Hence the same aggregate function that prevails in an economy of typical enterprises is consistent also with an economy whose enterprises are governed by much less restrictive assumptions.

B. Further Notes

1. Solution for (5f), the growth rate of output or \dot{P}_t/P_t , given the following system of equations:

$$(5) \quad P = aHK^\beta L^\alpha, \quad \text{where } \beta + \alpha = 1$$

$$(5a) \quad P = C + I$$

$$(5b) \quad I = \frac{dK}{dt} = \dot{K}$$

$$(5c) \quad C = (1 - s)P$$

$$(5d) \quad L = L_0 e^{\lambda t}$$

$$(5e) \quad H = \frac{K^\gamma}{L^{\gamma'}}.$$

Letting $\beta + \gamma = \theta$ and $\alpha - \gamma' = \phi$, (5) may be written:

$$(6) \quad P = aK^\theta L^\phi.$$

Inserting (5b) and (5c) in (5a) and the result in (6) we arrive at

$$(7) \quad \frac{dK}{dt} = saK^\theta L^\phi.$$

Inserting (5d) in (7) gives:

$$(8) \quad \frac{dK}{dt} = saK^\theta (L_0 e^{\lambda t})^\phi, \quad \text{and}$$

$$(9) \quad \frac{dK}{K^\theta} = (saL_0^\phi e^{\lambda\phi t}) dt.$$

Now integrate (9):

$$\int \frac{dK}{K^\theta} = saL_0^\phi \int e^{\lambda\phi t} dt$$

which for $\theta \neq 1$ results in:

$$\frac{K^{1-\theta}}{1-\theta} = \frac{saL_0^\phi e^{\lambda\phi t}}{\lambda\phi} + k_1$$

where k_1 is an arbitrary constant of integration. Hence

$$(10) \quad K = \left[\frac{(1-\theta)saL_0^\phi e^{\lambda\phi t}}{\lambda\phi} + k_2 \right]^{1/(1-\theta)}$$

where k_2 is another arbitrary constant. When $t=0$, $K=K_0$ so

$$k_2 = K_0^{1-\theta} - \frac{(1-\theta)saL_0^\phi}{\lambda\phi}.$$

Therefore

$$(11) \quad K_t = \left[K_0^{1-\theta} - \frac{(1-\theta)saL_0^\phi}{\lambda\phi} + \frac{(1-\theta)saL_0^\phi e^{\lambda\phi t}}{\lambda\phi} \right]^{1/(1-\theta)}$$

where K_t denotes the capital stock in year t . Substituting (11) and (5d) in (6) gives:

$$(12) \quad P_t = a \left[K_0^{1-\theta} - \frac{(1-\theta)saL_0^\phi}{\lambda\phi} + \frac{(1-\theta)saL_0^\phi e^{\lambda\phi t}}{\lambda\phi} \right]^{\theta/(1-\theta)} [L_0 e^{\lambda t}]^\phi.$$

Placing (12) in logarithmic form and differentiating with respect to t gives:

$$(13) \text{ and } (5f) \quad \frac{P_t}{P_t} = \frac{\theta\lambda\phi saL_0^\phi e^{\lambda\phi t}}{\lambda\phi K_0^{1-\theta} - (1-\theta)saL_0^\phi + (1-\theta)saL_0^\phi e^{\lambda\phi t}} + \lambda\phi$$

which in the very long run reduces to:

$$(14) \quad \frac{P_t}{P_t} = \frac{\theta\lambda\phi}{1-\theta} + \lambda\phi.$$

In the special case where $\theta=1$, return to (9) and divide through by dt to get:

$$(9a) \quad \frac{\dot{K}_t}{K_t} = saL_0^\phi e^{\lambda\phi t}.$$

Differentiate (5d) with respect to t and divide by L_t to get

$$(9b) \quad \frac{\dot{L}_t}{L_t} = \lambda.$$

Differentiate (6) with respect to t and divide by P_t to get:

$$(9c) \quad \frac{P_t}{P_t} = \theta \frac{\dot{K}_t}{K_t} + \phi \frac{\dot{L}_t}{L_t}.$$

Substitute (9a) and (9b) in (9c), so that:

$$(15) \text{ and } (5g) \quad \frac{P_t}{P_t} = saL_0^\phi e^{\lambda\phi t} + \lambda\phi.$$

2. A slight modification in the general solution will give the growth rate in output when a time trend is added to the production function. Rewrite (6) in the form:

$$(6a) \quad P = ae^{\theta t} K^\theta L^\phi$$

where g is some growth rate per year because of the time trend. Inserting (5b) and (5c) in (5a) and the result in (6a) gives instead of (7)

$$(7a) \quad \frac{dK}{dt} = sae^{\theta t} K^\theta L^\phi.$$

Inserting (5d) in (7a) then gives instead of (9):

$$(9d) \quad \frac{dK}{K^\theta} = (saL_0^\phi e^{(g+\lambda\phi)t}) dt.$$

Carrying through this change in succeeding steps changes the long-run growth rate (14) to:

$$(14a) \quad \frac{P_t}{P_t} = \frac{\theta(g + \lambda\phi)}{1 - \theta} + \lambda\phi + g.$$

If the modifier is neglected, i.e. equals unity (so that $\theta = \beta$ and $\phi = \alpha$), then (14a) reduces to:

$$(14b) \quad \frac{P_t}{P_t} = \frac{g}{\alpha} + \lambda$$

and output per worker grows at the rate:

$$(14c) \quad \frac{\left(\frac{P}{L}\right)_t}{\left(\frac{P}{L}\right)_t} = \frac{g}{\alpha}.$$

ENTRY, GIBRAT'S LAW, INNOVATION, AND THE GROWTH OF FIRMS

By EDWIN MANSFIELD*

Because there have been so few econometric studies of the birth, growth and death of firms, we lack even crude answers to the following basic questions regarding the dynamic processes governing an industry's structure. What are the quantitative effects of various factors on the rates of entry and exit? How well can the growth of firms be represented by Gibrat's law of proportionate effect? What have been the effects of successful innovations on a firm's growth rate? What determines the amount of mobility within an industry's size structure?¹

This paper provides some tentative answers to these questions. First, it constructs some simple models to estimate the effects of an industry's capital requirements, profitability, and other such factors on its entry and exit rates. Second, it investigates how well Gibrat's law of proportionate effect can represent the growth of firms in each of the industries for which we have appropriate data. Although this law has played a prominent role in models designed to explain the size distribution of firms, it has been tested only a few times against data for very large firms. Third, we estimate the difference in growth rate between firms that carried out significant innovations and other firms of comparable initial size. The results help to measure the importance of successful innovation as a cause of interfirm differences in growth rates, and they shed new light on the rewards for such innovations. Fourth, the paper presents and tests a simple model to explain interindustry and

* The author is associate professor of economics at Carnegie Institute of Technology. This paper, a preliminary version of which was read at the August 1961 meetings of the Econometric Society, will be reprinted as a Cowles Foundation Paper. The work on which it is based is part of a larger project on technical change and economic growth, supported by the Office of Economic and Statistical Studies of the National Science Foundation, by a Ford Foundation Faculty Research Fellowship, and by the Cowles Foundation for Research in Economics at Yale University. The paper has benefited from discussions with D. Fink, J. Muth, and N. Seiber. My thanks also go to G. Haines and D. Remington for their assistance and to various companies for data.

¹ With regard to the effects of various factors on the rates of entry and exit, there has been considerable theorizing [4] [14] [21] [30] and a few relevant empirical studies [4] [7], but there has been no systematic attempt to estimate the quantitative effect of various factors. With regard to the growth of firms, there have been several studies of Gibrat's law [11] [13] [15] [27] based only on the largest firms (one of which dealt in part with the determinants of the amount of mobility) and an analysis [8] of the size structure of the largest firms in the economy. There are no previous studies (as far as I know) of the effects of innovation on a firm's growth rate.

temporal differences in the extent to which firms change relative positions in the size distribution.

I. *Determinants of Rates of Entry and Exit*

A. *Entry, Profitability, and Capital Requirements*

Entry can be defined as the net change in the number of firms in an industry. Alternatively, it can be defined as the extent to which new owners of productive facilities become established in an industry either through the construction of new plants or the purchase of existing firms. Each concept has its own set of uses. The first concept is useful in analyzing problems regarding market structure and industrial concentration, since the number of firms in an industry is a significant factor in such problems. The second concept is useful in measuring the ease with which new entrepreneurs can become established in an industry and the extent to which they do so. For this purpose, it would be misleading to ignore those that entered by purchasing existing concerns.²

The second of these concepts is employed in the present subsection; the first will be employed in the next one. Regardless of which concept is used, perhaps the most obvious measure of the amount of entry into the i th industry during the t th period is E_{it}' —the number of firms that entered during the period as a proportion of the number of firms in the industry at the beginning of the period. But the available data force us to use E_{it} —the number of firms that entered during the period and survived until the end as a proportion of the original number of firms. Since E_{it}' and E_{it} should be highly correlated, this discrepancy is probably not too important for our purposes.³

Letting C_{it} be the investment required to establish a firm of minimum

² Of course, the second concept of entry is somewhat slippery, since it is sometimes difficult to define and detect a significant change in the ownership of a firm. This is particularly true in the case of large companies. In practice, we generally use changes in company names as indicators of changes in ownership (see the Appendix), but this is very crude. This problem also occurs in the next subsection and in Sections II and III.

A third definition of entry would be useful for some purposes. This would measure the number of firms that entered with new plant, regardless of the number of firms that scrapped their plant during the period. That is, it would be a gross measure of entry. Bain's discussion [4, p. 4ff.] generally runs in these terms. The available data do not permit us to measure this gross concept of entry. See the Appendix.

³ Other measures might be used: e.g., the absolute number of entrants. But the establishment of two new firms would seem to mean one thing if there previously were two firms and something else if there previously were 100. Moreover, one would expect that ease of entry would be directly related to the number of firms in the industry [23]. Although it is somewhat arbitrary, it seems sensible to follow the Department of Commerce's procedure [7] and to normalize in this way for the original number of firms.

The size of the entrants—as well as their number—might be very important for some problems. Although we ignore this aspect of the problem, it could be included fairly easily. Note too that, in comparisons of the values of E_{it} , differences in length of the period might be important. Although we tried to obtain periods of equal length, this was not always feasible. However, when introduced into equations (3), (7), and (16), this factor has no significant effect on E_{it} , R_{it} , or P_{it} . See Section IV A.

efficient size in the i th industry during the t th period and letting Π_{it} be the average ratio of the rate of return in the i th industry to that in all manufacturing during this period, we assume that

$$(1) \quad E_{it} = f(\Pi_{it}, C_{it}, \dots).$$

Increases in Π_{it} —because of their presumed effect on profit expectations—make entry more attractive, and increases in C_{it} make it more difficult. Thus, E_{it} should be directly related to Π_{it} and inversely related to C_{it} .⁴

More specifically, since the effects of these variables are likely to be multiplicative, we assume that

$$(2) \quad E_{it} = \alpha_0 \Pi_{it}^{\alpha_1} C_{it}^{-\alpha_2} Z_{it},$$

where Z_{it} is a random error term and the α 's are presumed to be positive. To estimate the α 's, data are needed on E_{it} , Π_{it} , and C_{it} . Table 1 shows the values of E_{it} during various periods in the history of the steel, petroleum refining, rubber tire, and automobile industries. It also contains corresponding estimates of Π_{it} and C_{it} , the latter being based on Bain's figures [4] and the assumption that the ratio of the minimum efficient size to the average size of firm remained constant over time in each industry. Although these data are very rough they should be useful first approximations.⁵

Having only the transition matrices in the Appendix, we had no choice but to use E_{it} . So long as the survival rate for new firms is relatively independent of E_{it}' or positively correlated with it, E_{it} should be a reasonably good surrogate. Moreover, if one believes that we should only be concerned with entrants that survive for some specified length of time, E_{it} may be closer to what we want than E_{it}' . Finally, E_{it} has the advantage that it equals $D_{it} + R_{it}$. See Section I B.

⁴ As a first approximation, it may not be too unreasonable to assume that the profit expectation of potential entrants during the period is a function of Π_{it} . But many other factors are obviously of importance—the variability of the industry's profits during the period, the absolute level of profits, the probability that new processes or related new products will be developed, the outlook with regard to factor prices, etc. Note too that C_{it} may vary, depending on whether the entrant is an existing firm in a related industry or an entirely new enterprise; that C_{it} should be measured in real terms; and that the effect of C_{it} will depend on the ease with which a given amount of capital can be obtained.

Equation (2) should be much more effective in explaining changes in the number of new firms with new plant than changes in the numbers of firms that are bought. For example, if Π_{it} is relatively high, relatively few firms may be sold. But, since new firms with new plant are a large percentage of the total number of entrants included in E_{it} (about two-thirds of the total in recent years, according to [7]), equation (2) is a reasonable first approximation. (However, one might argue from this that the error term is additive.) Unfortunately, the data are such that one cannot treat the entrants with new plant separately from those that bought existing plant.

⁵ The Appendix describes the data on entry for each industry and explains how the data regarding C_{it} and Π_{it} were derived. It also points out the difficulties in these measures. I suspect that the true values of C_{it} (and $\bar{S}_{it}/\bar{S}_{it}$) for petroleum in 1921-27 and 1927-37 were substantially lower than those shown in Table I and that the true values of C_{it} (and $\bar{S}_{it}/\bar{S}_{it}$) for steel in 1916-26 and 1926-35 were somewhat higher than those shown in Table I. Errors of this sort, assuming they are randomly distributed, are taken into account in the analysis below.

Taking logarithms of both sides of equation (2) and using these data to obtain least-squares estimates of the α 's, we find that

$$(3) \quad \ln E_{it} = .49 + 1.15 \ln \Pi_{it} - .27 \ln C_{it} \quad (.43) \quad (.14)$$

where the quantities in parentheses are standard errors and $\ln Z_{it}$ is omitted. As one would expect, there is considerable variation about equation (3), the coefficient of correlation (corrected for degrees of freedom) being about .70 (Figure 1). The residuals reflect the effects of dif-

TABLE 1—VALUES OF EXOGENOUS AND ENDOGENOUS VARIABLES IN EQUATIONS (3), (7), AND (16), STEEL, PETROLEUM, RUBBER TIRE, AND AUTOMOBILE INDUSTRIES, SELECTED PERIODS^a

Industry and Time Period	E_{it}	Π_{it}	C_{it}	R_{it}	V_{it}^2	$\bar{S}_{it}/\hat{S}_{it}$	P_{it}	A_{it}	n_{it}
Steel:									
1916-26	.57	1.38	228	.20	18	1.15	.20	271	90
1926-35	.08	.38	214	.46	20	1.15	.17	281	122
1935-45	.20	.73	423	.16	12	1.15	.17	290	76
1945-54	.17	.77	465	.15	9	1.15	.26	300	81
Petroleum:									
1921-27	.66	.84	93	.59	11	.17	.36	62	314
1927-37	.46	.60	138	.65	13	.17	.42	68	335
1937-47	.78	.82	231	.42	15	.17	.35	78	269
1947-57	.25	1.01	238	.71	21	.17	.26	88	366
Tires:									
1937-45	.45	.84	11	.31	8	1.18	.30	41	49
1945-52	.68	.88	22	.46	10	1.18	.26	49	57
Autos:									
1939-49	.20	.94 ^b	316	.20	3	1.00	—	—	—
1949-59	.10	.36 ^b	575	.50	4	1.00	—	—	—

^a Symbols: E_{it} is the number of firms that entered the i th industry during the t th period (and survived until the end of the period) as a proportion of the number in the industry at the beginning of the period; Π_{it} is the average ratio of the rate of return in the i th industry during the t th period to that in all manufacturing; C_{it} is the investment (in millions of dollars) required to establish a firm of minimum efficient size in the i th industry during the t th period; R_{it} is the proportion of the firms in the i th industry at the beginning of the t th period that left during the period; V_{it} is the coefficient of variation of the firm sizes in the i th industry at the beginning of the t th period; $\bar{S}_{it}/\hat{S}_{it}$ is the ratio of the average size of firm to the minimum efficient size of firm in the i th industry at the beginning of the t th period; P_{it} is the probability that a randomly drawn firm in the i th industry will be smaller at the end of the t th period than another firm drawn randomly from those 60-70 per cent of its size at the beginning of the t th period; A_{it} is the age of the i th industry (in years) at the beginning of the t th period; and n_{it} is the number of firms in the i th industry at the beginning of the t th period. For a discussion of some of the difficulties in these measures, see the Appendix and notes 3, 26 and 27.

^b See the Appendix, paragraph 7, for some discussion of these figures.

Source: See the Appendix.

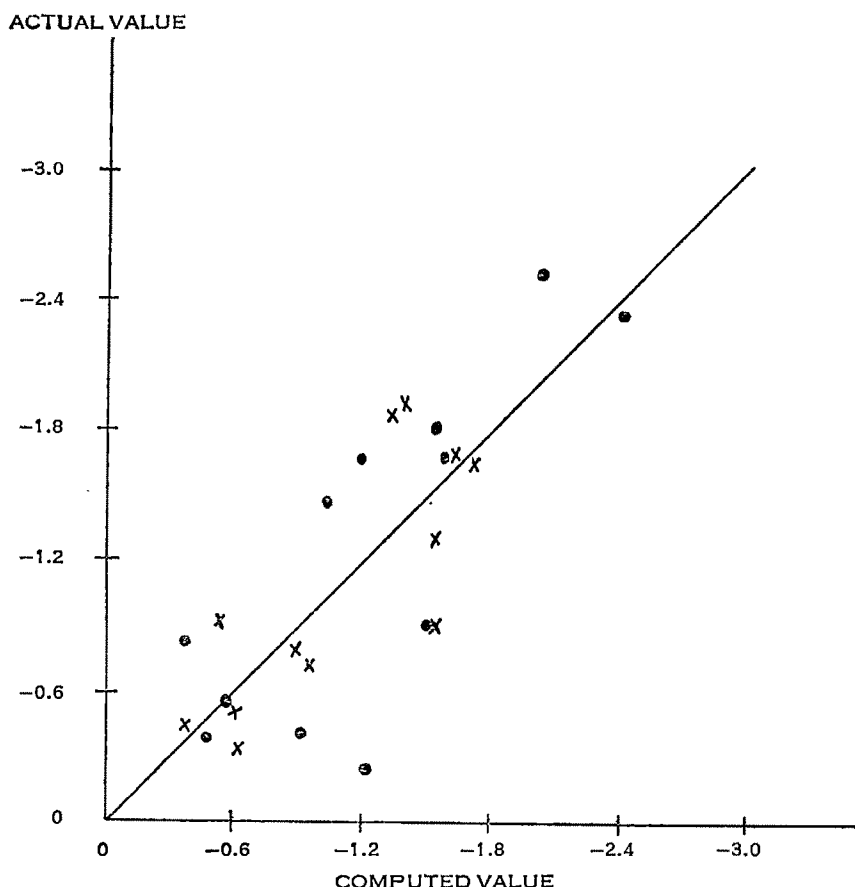


FIGURE 1. PLOT OF ACTUAL VALUES OF $\ln E_{it}$ AND $\ln R_{it}$ AGAINST THOSE COMPUTED FROM EQUATIONS (3) AND (7), STEEL, PETROLEUM, RUBBER TIRE, AND AUTOMOBILE INDUSTRIES, SELECTED PERIODS.^a

^a The dots represent $\ln E_{it}$ and the X's represent $\ln R_{it}$. E_{it} is the number of firms that entered the i th industry during the t th period (and survived until the end of the period) as a proportion of the number in the industry at the beginning of the period. R_{it} is the proportion of the firms in the i th industry at the beginning of the t th period that left during the period.

Source: Table 1 and equations (3) and (7). The line is a 45° line through the origin.

ferences in the capacity of a firm of minimum efficient size as a per cent of the total market, availability of raw materials, and other important factors that are omitted.⁶

The estimates of α_1 and α_2 have the expected signs and are both statistically significant (.05 level). Because of the small number of ob-

⁶ For an elementary account of some of the factors omitted here, see [24]. For a discussion of the automobile industry, see [31]. Of course, the influence of the Second World War (with controls of various sorts) should not be overlooked either.

servations, they have fairly large standard errors, and because of errors in the exogenous variables and the probable effects of $\ln E_{it}$ on $\ln \Pi_{it}$ (cf. Section IV A), they are probably biased somewhat toward zero. But despite these limitations, they shed new light on the effects of Π_{it} and C_{it} on E_{it} . For example, if the bias is in the expected direction, one can be reasonably sure that the average value of E_{it} would increase by at least 60 per cent if Π_{it} doubled and that it would decrease at least 7 per cent if C_{it} doubled. Lower bounds of this sort are obviously useful.⁷

B. Exit Rates and Changes in the Number of Firms

This subsection estimates the effects of several factors on the rate at which firms leave an industry, and it takes up the effects of these, and related, variables on the amount of entry defined in terms of changes in the number of firms—the first of the two concepts of entry defined at the beginning of this section. We use R_{it} —the proportion of firms in the i th industry at the beginning of the t th period that had left by the end—as a measure of the exit rate. Both firms that scrapped their plant and those that sold out are counted as departures.

Letting $R_{it}(S)$ be the proportion of firms of size S (at the beginning of the period) that left during the period, we assume that

$$(4) \quad R_{it}(S) = g(S/\hat{S}_{it}, \Pi_{it}, \dots),$$

where \hat{S}_{it} is the minimum efficient size of firm at the beginning of the period. As a firm becomes smaller relative to the minimum efficient size, its chance of survival decreases; and as the industry becomes less profitable relative to others, firms become more likely to leave. Thus, $R_{it}(S)$ should be inversely related to both S/\hat{S}_{it} and Π_{it} .⁸

Since their effects are likely to be multiplicative, we assume that

$$(5) \quad R_{it}(S) = \nu_0 (S/\hat{S}_{it})^{-\nu_1} \Pi_{it}^{-\nu_2} Z'_{it}$$

⁷ The tests described above are one-tailed tests—which are appropriate here. Our primary purpose is to estimate the effects of Π_{it} and C_{it} on E_{it} , rather than to see if they have any effect. They almost certainly do have an effect but research to date provides little or no clue regarding its magnitude.

For a discussion of the biases due to measurement errors and least-squares, see Section IV A and note 31 in particular. If there were no bias, the likelihood that the lower bounds in the test would be exceeded would equal .85. Given the probable bias, it should be much higher.

The percentage change in the average value of E_{it} , given a doubling of Π_{it} , is $2^{\alpha_1} - 1$. The effect of doubling C_{it} is given by substituting $-\alpha_2$ for α_1 . Of course, one could get lower bounds for the effects of a 10, 20, . . . per cent change in Π_{it} and C_{it} in exactly the same way.

⁸ Of course, the sale of a firm need not mean that it was a failure. Equation (4) is likely to represent the scrapping or abandonment rate better than the rate at which firms are sold. But the former is likely to be a large part of the total and hence equation (4) is likely to represent R_{it} fairly well. The data are such that firms which scrapped their plant cannot be separated from those that sold out. See the Appendix.

where Z'_{it} is a random error term and the ν 's are presumed to be positive. Letting $\rho_{it}(S)$ be the probability that a firm in the i th industry at the beginning of the period is of size S and assuming that the distribution of firms by size is log-normal,⁹ we have

$$(6) \quad R_{it} = \int_0^\infty R_{it}(S) \rho_{it}(S) dS = \nu_0 \left[\int_0^\infty (S/\hat{S}_{it})^{-\nu_1} \rho_{it}(S) dS \right] \Pi_{it}^{-\nu_2} Z'_{it},$$

$$R_{it} = \nu_0 [\bar{S}_{it}/\hat{S}_{it}]^{-\nu_1} (1 + V_{it}^2)^{\nu_1(\nu_1+1)/2} \Pi_{it}^{-\nu_2} Z'_{it}$$

where \bar{S}_{it} is the mean and V_{it} is the coefficient of variation of the distribution of firm sizes.

Table 1 contains rough estimates of R_{it} , $\bar{S}_{it}/\hat{S}_{it}$, and V_{it} .¹⁰ Taking logarithms of both sides of equation (6), we can use these data to obtain least-squares estimates of the ν 's. The results are

$$(7) \quad \ln R_{it} = -1.68 - .41 \ln (\bar{S}_{it}/\hat{S}_{it}) + .10 \ln (1 + V_{it}^2) - .60 \ln \Pi_{it},$$

(.14)
(.25)
(.33)

where the quantities in parentheses are standard errors and $\ln Z'_{it}$ is omitted. For simplicity, the coefficient of $\ln (1 + V_{it}^2)$ was not constrained to equal $\nu_1(\nu_1+1)/2$ —although this constraint would have resulted in somewhat better estimates of the ν 's. Figure 1 shows that there is considerable variation about equation (7), the coefficient of correlation (corrected for degrees of freedom) being .70.¹¹

The estimates of ν_1 and ν_2 have the correct signs and are statistically significant. Although they contain fairly large sampling errors and are probably biased somewhat toward zero (because of errors in the exogenous variables and the probable effects of $\ln R_{it}$ on $\ln \Pi_{it}$), they provide useful information regarding the effects of $\bar{S}_{it}/\hat{S}_{it}$ and Π_{it} on R_{it} . For example, if the bias is in the expected direction, one can be reasonably sure that the average value of R_{it} would decrease by at least 15 per cent

⁹ The log-normal distribution seems to provide a reasonably good (but by no means perfect) fit to the distribution of firms by size. See [13]. Note that we assume only that it is a serviceable approximation from an empirical point of view. Some other distribution (e.g., the Yule distribution) may be more appropriate, but, if it can be approximated by a log-normal, this is good enough for present purposes. The Appendix gives the units in which a firm's size is measured.

¹⁰ The sources and limitations of the data regarding R_{it} , $\bar{S}_{it}/\hat{S}_{it}$, and V_{it} are discussed in the Appendix.

¹¹ The residuals reflect the effects of various important variables that are omitted—the extent to which the plants in the industry can be adapted for other uses, the adaptability and mobility of the management and the work force, the liquidity of the firms, the durability of their equipment, the rate at which costs rise when firms are less than minimum efficient size, etc.

if Π_{it} or $\bar{S}_{it}/\hat{S}_{it}$ doubled. Lower bounds of this sort can easily be computed for the effects of other percentage increases in Π_{it} or $\bar{S}_{it}/\hat{S}_{it}$.¹²

We are now in a position to consider the first, and probably for most purposes the more important, definition of entry. A reasonable measure in this case is D_{it} —the change in the number of firms during the period as a proportion of the number at the beginning. Since the number of firms bought during the period must equal the number sold,

$$(8) \quad D_{it} = E_{it} - R_{it}.$$

Taking antilogs of both sides of equations (3) and (7), multiplying the resulting right-hand-side of each equation by $e^{\sigma^2/2}$ (where σ^2 is the variance of Z_{it} or Z'_{it}) to obtain an unbiased estimate of E_{it} or R_{it} , and inserting the results into equation (8), we can estimate the change in the number of firms, given that the values of Π_{it} , C_{it} , $\bar{S}_{it}/\hat{S}_{it}$, and V_{it}^2 are given.

Of course, such estimates are likely to be rough because of the crudeness of the estimates of the α 's and ν 's and the likelihood that there will be considerable variation about the expected value of D_{it} . (In the 12 cases for which we have data, the correlation between the actual and computed values of D_{it} is .60.) Nonetheless, they may be of use as first approximations in estimating D_{it} and in estimating the effects of changes in Π_{it} , C_{it} , $\bar{S}_{it}/\hat{S}_{it}$ and V_{it}^2 on the average value of D_{it} .

Two further points should be noted. First, it would be preferable to combine equations (2) and (6), obtain D_{it} as a function of Π_{it} , C_{it} , etc., and estimate the α 's and ν 's all at once. But the difference between equations (2) and (6) is awkward to work with. [Perhaps future work will show that some other form of equations (2) and (6) that is more convenient in this respect will fit as well.] Second, the empirical results in this section, like those in Section III, pertain to periods of 7–10 years. They should not be applied to periods much longer or shorter than this.

II. *The Process of Firm Growth*

A. *Gibrat's Law and the Growth of Firms*

Gibrat's law is a proposition regarding the process of firm growth. According to this law, the probability of a given proportionate change in

¹² The procedure used to obtain these figures is just like that described in note 7. Again, our primary purpose is to estimate the effects of the exogenous variables, not to test whether they have any effect. Almost certainly, they have some effect on R_{it} .

This model also suggests a technique for estimating the minimum efficient size of firm in an industry. Suppose that \hat{S}_{it} , rather than R_{it} , were regarded as the "dependent" variable. If data regarding R_{it} , \bar{S}_{it} , Π_{it} and V_{it}^2 were obtained for some new industry or time period, they could then be used to estimate \hat{S}_{it} . This technique is likely to be rough, but some work might be carried out to see how accurate it is and to sharpen it. Of course, this presumes that the

size during a specified period is the same for all firms in a given industry—regardless of their size at the beginning of the period. For example, a firm with sales of \$100 million is as likely to double in size during a given period as a firm with sales of \$100 thousand. Put differently, Gibrat's law states that:

$$(9) \quad S_{ij}^{t+\Delta} = U_{ij}(t, \Delta) S_{ij}^t,$$

where S_{ij}^t is the size of the j th firm in the i th industry at time t , $S_{ij}^{t+\Delta}$ is its size at time $t+\Delta$, and $U_{ij}(t, \Delta)$ is a random variable distributed independently of S_{ij}^t .

Since this law is a basic ingredient in many mathematical models designed to explain the shape of the size distribution of firms and since this law has interesting implications regarding the determinants of the amount of concentration in an industry, some importance attaches to whether or not it holds. This section provides tests based on data for practically all firms—large and small—in three individual industries: the steel, petroleum, and rubber tire industries. The automobile industry is omitted because, with only a handful of firms, it is unlikely to provide much evidence regarding a proposition of this sort.¹³

A simple way to test Gibrat's law is to classify firms by their initial size (S_{ij}^t), compute the frequency distribution of $S_{ij}^{t+\Delta}/S_{ij}^t$ within each of these classes, and use a χ^2 test to determine whether the frequency distributions are the same in each class. We rely heavily on this test, but supplement it with others. The basic data used in these tests are described and presented in the Appendix.

Gibrat's law can be formulated in at least three ways, depending on the treatment of the death of firms and the comprehensiveness claimed for the law. First, one can postulate that it holds for all firms—including those that leave the industry during the period. If we regard the size (at the end of the period) of each of these departing firms as zero (or approximately zero), this version can easily be tested. The results—shown in Table 2—indicate that it generally fails to hold. In seven of the ten cases, the observed value of χ^2 exceeds the critical limit corresponding to the .05 significance level.¹⁴

Why does this version of the law fail to hold? Even a quick inspection of the transition matrices in the Appendix shows one principal reason. The probability that a firm will die is certainly not independent of its

long-run average cost curve is J-shaped and consequently that a minimum efficient size of firm exists in the new industry. For another technique that is somewhat similar in spirit, see Stigler [29].

¹³ For a discussion of the use of Gibrat's law in explaining the size distribution of firms, see [12] [13] [27]. For previous tests, see also [11] [15]. In connection with [27], see note 17.

¹⁴ The size classes and the cut-off points for $S_{ij}^{t+\Delta}/S_{ij}^t$ used in these tests are described in the Appendix.

TABLE 2—OBSERVED VALUE OF χ^2 CRITERION, ESTIMATED SLOPE OF REGRESSION OF $\ln S_{ij}^{t+\Delta}$ ON $\ln S_{ij}^t$, AND RATIO OF VARIANCES OF GROWTH RATES OF LARGE AND SMALL FIRMS, STEEL, PETROLEUM, AND RUBBER TIRE INDUSTRIES, SELECTED PERIODS.^a

Item	Steel				Petroleum				Tires	
	1916-1926	1926-1935	1935-1945	1945-1954	1921-1927	1927-1937	1937-1947	1947-1957	1937-1945	1945-1952
χ^2 criterion:										
Including deaths	9.0	17.0 ^b	22.5 ^b	7.8	29.2 ^b	44.9 ^b	25.6 ^b	42.7 ^b	9.3	22.9 ^b
Excluding deaths	7.1	3.3	9.5 ^b	3.4	2.8	22.1 ^b	17.7 ^b	8.9	6.3	6.6 ^b
Degrees of freedom (χ^2 tests):										
Including deaths	6	6	6	6	6	6	6	6	6	4
Excluding deaths	4	4	4	4	4	4	4	4	4	2
Estimated slope: ^c										
Excluding deaths	.88 ^b	.99	.92 ^b	1.00	.94	.88 ^b	.99	.94	.97	.97
Large firms only	.94	.96	1.00	.98	.99	.98	.93	1.10	1.07	.89
Standard error of slope:										
Excluding deaths	.05	.04	.03	.04	.05	.04	.03	.04	.05	.04
Large firms only	.16	.16	.07	.06	.24	.14	.07	.07	.10	.05
Number of firms:										
Excluding deaths	72	66	64	69	128	116	156	106	34	31
Large firms only	7	9	11	12	7	11	16	17	11	12
Ratio of variances of growth rates of large and small firms: ^d										
Excluding deaths	8.96 ^b	.80	37.40 ^b	5.06 ^b	43.27 ^b	19.25 ^b	63.56 ^b	147.1 ^b	16.16 ^b	.31
Large firms only	.63	161.00 ^b	.90	8.50 ^b	3.50	7.75 ^b	4.00 ^b	3.6 ^b	39.25 ^b	8.67

^a Symbols: S_{ij}^t is the size of the j th firm in the i th industry at time t , and $S_{ij}^{t+\Delta}$ is its size at time $t+\Delta$. For the classification of firms by size and the classification of $S_{ij}^{t+\Delta}/S_{ij}^t$ used in each industry in the χ^2 tests, see the Appendix. The number of degrees of freedom equals $(a-1)(b-1)$ where a is the number of size classes and b is the number of classes of $S_{ij}^{t+\Delta}/S_{ij}^t$ in the contingency table.

^b For χ^2 criteria and ratios of variances, this means that the probability is less than .05 that a value would be this large (or larger) if Gibrat's law held. For estimated slopes, this means that they differ significantly from unity (.05 significance level).

^c The number of firms in each regression is shown under "Number of firms."

^d The firms regarded as "small" and "large" in the first row are as follows: In steel, small firms have 4,000-16,000 and large firms have 256,000-4,096,000 tons of capacity. In petroleum, small firms have 500-999 and large firms have 32,000-511,999 barrels of capacity. In tires, small firms have 80-159 and large firms have 640-5,119 employees. The firms regarded as "small" and "large" in the second row are described in note 18.

Source: See the Appendix.

size. In every industry and time interval, the smaller firms were more likely than the larger ones to leave the industry. For this reason (and others indicated below), this version of the law seems to be incorrect.¹⁵

Second, one can postulate that the law holds for all firms other than those that leave the industry. Hart and Prais [13] seem to adopt this version. Omitting such firms, we ran another series of χ^2 tests, the results of which are shown in Table 2. In four of the ten cases, the evidence seems to contradict the hypothesis, the observed value of χ^2 exceeding the limit corresponding to the .05 significance level.

To see why this version must be rejected, note that equation (9) implies that

$$(10) \quad \ln S_{ij}^{t+\Delta} = V_i(t, \Delta) + \ln S_{ij}^t + W_{ij}(t, \Delta),$$

¹⁵ The way mergers are handled here (see the Appendix) may help to produce an inverse relationship between a firm's size and its probability of death. But this alone cannot account for this result. Such a relationship has often been noted before. E.g., see [1] [23].

where $V_{ij}(t, \Delta)$ is the mean of $\ln U_{ij}(t, \Delta)$ and $W_{ij}(t, \Delta)$ is a homoscedastic random variable with zero mean. Thus, if $\ln S_{ij}^{t+\Delta}$ is plotted against $\ln S_{ij}^t$, the data should be scattered with constant variance about a line with slope of one. Table 2 contains the least-squares estimate of the slope of each of these lines. In half of the cases where the law was rejected the slope is significantly less than one.

In addition, the variance of $S_{ij}^{t+\Delta}/S_{ij}^t$ tends to be inversely related to S_{ij}^t . Taking in each case a group of small firms and dividing the variance of their values of $S_{ij}^{t+\Delta}/S_{ij}^t$ by the variance among a group of large firms, we obtain the results shown in Table 2. In eight of the ten cases the variances differed significantly. Thus, contrary to this version of the law smaller firms often tend to have higher and more variable growth rates than larger firms.¹⁶

Third, one can postulate that the law holds only for firms exceeding the minimum efficient size in the industry—the size (assuming the long-run average cost curve is J-shaped) below which unit costs rise sharply and above which they vary only slightly. This is the version put forth by Simon and Bonini [27], although it seems to be a stronger assumption than they require.¹⁷ One is faced once again with the problem of whether or not to include firms that die. We excluded them, but the major results would almost certainly have been the same if they had been included.

This version was tested in two ways. First, we estimated the slope of the regression of $\ln S_{ij}^{t+\Delta}$ on $\ln S_{ij}^t$, but included only those firms that were larger than Bain's [4] estimate of the minimum efficient size. The results are quite consistent with Gibrat's law (the slopes never differing significantly from one). Second, we used F tests to determine whether the variance of $S_{ij}^{t+\Delta}/S_{ij}^t$ was constant among these firms. Contrary to

¹⁶ These results differ in part from those of [13] [27] [11] [15]. The latter conclude that there was no tendency for the smaller firms to grow more rapidly than the large ones. But this was due to the fact that they included only very large firms. With regard to the larger variation in growth rates among smaller firms, our findings agree with those in [11] [15], but differ from those in [27]. There is no treatment of this in [13].

All firms that survived during the period are included in these regressions. Note that all crude capacity—domestic and foreign—is included for each firm in the petroleum industry. The data on foreign capacity had to be obtained from the individual firms.

In one case in steel, the slope is significantly less than one but this does not show up in the χ^2 test—largely because of the incomplete coverage in the latter. See the Appendix. One-tailed F tests are used to determine whether the variances differ. In several cases, the variances differ significantly, but it does not show up in the χ^2 tests.

¹⁷ Herbert Simon informs me that the version of Gibrat's law they used in [27] is not required to obtain the Yule distribution and that their proof will hold if the expected value of $S_{ij}^{t+\Delta}/S_{ij}^t$ does not vary with S_{ij}^t , regardless of whether or not the variance of $S_{ij}^{t+\Delta}/S_{ij}^t$ depends on S_{ij}^t . Our results do not contradict these weaker assumptions for firms above the minimum efficient size and consequently they do not contradict their findings based on them. But they do contradict the version of Gibrat's law in [27].

Gibrat's law, the variance of $S_{ij}^{t+\Delta}/S_{ij}^t$ tends to be inversely related to S_{ij}^t in six of the ten cases.¹⁸

Thus, regardless of which version one chooses, Gibrat's law fails to hold in more than one-half of these cases. What sort of mechanism produced the observed departures from this law? The reasons for the inverse relationships between a firm's chance of death and its initial size seem fairly obvious, but why should the data for the survivors show that the smaller firms tend to have higher and more variable growth rates than the larger ones?¹⁹

One very simple model that might help to account for this is as follows. Consider the distribution of growth rates of firms of size S_{ij}^t that would have resulted if none had left the industry. It is not unreasonable to suppose that above some minimum value of S_{ij}^t the average of this distribution would have been about the same in each size class and that it would have exceeded the average growth rate that would have been experienced by firms that left the industry. For simplicity, we assume that the difference between these averages was the same in each size class. Moreover, because each large firm can be viewed as a collection of somewhat independent smaller firms, the variance of this distribution would be expected to be inversely related to S_{ij}^t .²⁰

Then, under the fairly reasonable assumption that the actual growth rate of each survivor is proportional to what it would have been if all

¹⁸ The χ^2 tests had to be abandoned here because of the small number of firms. Firms with more than 64,000 barrels of capacity (petroleum), 1,000,000 net tons of capacity (steel), or .8 per cent of total employment (tires) were included in the regression. The number included in each case is shown in Table 2. The fact that none of the slopes differs significantly from one indicates that there is no evidence that among these firms the average growth rate depended on a firm's initial size.

In the variance ratio tests we divided these firms into two size (S_{ij}^t) groups, the dividing line being 150,000 barrels of capacity (petroleum), 3,000,000 tons of capacity (steel), and 30,000 employment (tires). Then F tests were used to determine whether the variances of $S_{ij}^{t+\Delta}/S_{ij}^t$ differed. This test is not too robust with regard to departures from normality, but it should perform reasonably well here.

Note that in petroleum and tires we include firms that are more than one-half of the minimum efficient sizes given in the Appendix. According to Bain [4], the cost curve is quite flat back to one-half of those sizes. Thus, it seemed acceptable to include the additional firms and to increase the power of the tests in this way.

¹⁹ Note that the inverse relationship between S_{ij}^t and the average growth rate shows up only when all firms are included. There is no evidence of this among firms exceeding the minimum efficient size. (The inverse relationship between S_{ij}^t and the variability of growth rates shows up in both cases.)

²⁰ The growth rate of a large firm can be viewed as the mean of the growth rates of its smaller "components" (e.g. plants). This point has also been made in [15]. Note that, if the growth rates of the components (plants or otherwise) were independent, the standard deviation would be inversely proportional to the square-root of a firm's size. But, since they tend to be located in the same region and have other similarities, one would expect the growth rate of such components to be positively correlated. Thus, the standard deviation would not be expected to decrease as rapidly with increases in size as the square-root formula suggests. In fact, this expectation turns out to be true.

firms had survived, one can show that

$$\sigma_S^2(S) = \mu^2 \left\{ \sigma_t^2(S) - \frac{P(S)K^2}{[1 - P(S)]^2} \right\},$$

where $\sigma_S^2(S)$ is the variance of the growth rates of the survivors (originally of sizes S_{ij}^t), $\sigma_t^2(S)$ is the variance of the growth rates of all firms (originally of size S_{ij}^t) that would have resulted if all had survived, K is the difference between the average growth rate of all firms (if none had left) and the average growth rate that would have been experienced by those leaving the industry, $P(S)$ is the probability of death for firms initially of size S_{ij}^t and μ is the ratio of a survivor's actual growth rate to what it would have been if all had survived. (This assumes that if they had not left, the firms originally of size S_{ij}^t that left the industry would have had growth rates with a variance of $\sigma_t^2(S)$.)

In addition, one can show that the average growth rate of the survivors originally of size S_{ij}^t equals

$$\bar{S}(S) = \mu \left\{ \bar{l} + \frac{P(S)K}{1 - P(S)} \right\},$$

where \bar{l} is the average growth rate for all firms of size S_{ij}^t if none had left the industry. Note that we, in the same spirit as [27], are stipulating only that \bar{l} will be constant above some minimum size.

Thus, if $\sigma_t^2(S)$ is inversely related to S_{ij}^t (for the reason discussed in note 20) and if $P(S)$ is inversely related to S (which certainly is true), it follows that $\sigma_S^2(S)$ will be inversely related to S_{ij}^t so long as $P(S) > 1/3$ or $d\sigma_t^2(S)/dS_{ij}^t$ is large in absolute terms relative to $dP(S)/dS_{ij}^t$. Moreover, it follows that $\bar{S}(S)$ will be inversely related to S_{ij}^t .

Thus, if this highly simplified model should be at all reliable, one would often expect to observe departures from Gibrat's law of the sort found in Table 2. Research should be carried out to develop and study more sophisticated models of the growth process. Although Gibrat's law is very convenient from an analytical point of view, it does not seem to hold up very well empirically. It seems to be a rather unreliable base on which to rest theories of the size distribution of firms.

B. *Successful Innovation and the Growth of Firms*

How much of an impact does a successful innovation have on a firm's growth rate? In another study [17], I presented a list of the firms that were first to introduce the significant new processes and products that emerged since the First World War in the steel and petroleum refining industries. (See the Appendix for a brief description of this list.) A comparison of their growth rates—during the period in which the innovation occurred—with those of other comparable firms should help to indicate

how great the pay-off is (in terms of growth) for a successful innovation.

For each period for which we have data, Table 3 estimates the average annual growth rate of (1) firms that carried out significant innovations during the period, and (2) other firms that were equal in size to the successful innovators at the beginning of the period. There is a marked difference between the two groups. In every time interval and in both industries, the successful innovators grew more rapidly than the others; and in some cases, their average rate of growth was more than twice that of the others.²¹

Taking each innovator separately, the difference between its growth rate and the average growth rate of other comparable firms seems to have been inversely related to its size. As one would expect, a successful innovation had a much greater impact on a small firm's growth rate than on a large firm's. The fact that fewer of the successful innovators in more recent periods were small firms probably accounts in part for the decrease over time in the average difference (in Table 3) between the two groups.²²

Each growth rate in Table 3 pertains to the entire period indicated in the caption—whereas the innovations occurred sometime within the period. Consider the period from time t to time $t+\Delta$. Suppose that the j th successful innovator in this period introduced its innovation at time t_j , that its average annual growth rate from time t to time t_j exceeded that of other comparable firms by e_j , and that its average annual growth rate from time t_j to time $t+\Delta$ exceeded that of other comparable firms by e_j+d_j . What were the average values of e_j and d_j ? If the innovators grew more rapidly than other firms because of certain characteristics associated with the innovation, but not because of the innovation itself, and if these characteristics had approximately the same effect throughout the period, the average value of d_j would be expected to be zero.

²¹ Note: (1) We are not comparing innovators with noninnovators, since some of the "other firms" may have been unsuccessful innovators. Because we can only include successful innovators (the data being what they are), it is not surprising that they have higher growth rates, and we are much more interested in the size of the difference than in its existence. (2) Some of the innovators introduced more than one innovation during the period. Thus, the difference in growth rates is not due entirely to a single innovation. But in the subsequent analysis (involving \bar{d}) only cases involving a single innovation are included. (3) It would be interesting to see how an innovation's effects depended on its character, but we have too little data to attempt this. (4) The way in which the average annual growth rate of the "other firms" in Table 3 was computed is described in the Appendix.

²² If the innovators in steel are divided into two groups—those above 1,000,000 tons and those less than (or equal to) 1,000,000 tons at the beginning of the period—the average difference between their growth rates and the growth rates of other comparable firms differs considerably between the groups. Among the larger firms, the average difference is generally about .5 points whereas it is 3–10 points among the smaller ones. Similarly, if the innovators in petroleum are divided into two groups—those above 32,000 barrels and those less than (or equal to) 32,000 barrels at the beginning of the period—the average difference is practically zero among the larger firms but 6–24 points among the smaller ones.

TABLE 3—AVERAGE ANNUAL GROWTH RATES OF SUCCESSFUL INNOVATORS AND OTHER FIRMS (OF COMPARABLE INITIAL SIZE), COMPUTED VALUES OF \bar{e} AND \bar{d} , AND REGRESSIONS (EXCLUDING INNOVATORS) OF $\ln S_{ij}^{t+\Delta}$ ON $\ln S_{ij}^t$, STEEL AND PETROLEUM REFINING INDUSTRIES, SELECTED PERIODS.^a

Item	Steel				Petroleum			
	1916- 1926	1926- 1935	1935- 1945	1945- 1954	1921- 1927	1927- 1937	1937- 1947	1947- 1957
Average annual growth rate (per cent):								
Innovators	13.7	6.5	3.4	3.2	13.1	7.9	3.6	6.7
Other Firms	3.7	3.3	2.0	2.4	6.6	4.1	3.6	4.2
Computed value of: ^b								
\bar{e} (per cent)	—	0.7	0.7	—	—	4.2	-2.5	-2.8
\bar{d} (per cent)	—	3.9	5.2	—	—	5.7	3.6	13.4
Regression (excluding innovators) of $\ln S_{ij}^{t+\Delta}$ on $\ln S_{ij}^t$:								
Intercept (a_i)	1.68	.55	1.34	.18	1.10	1.68	.41	1.27
Slope (b_i)	.88	.97	.90	1.01	.93	.84	.98	.90

^a Symbols: S_{ij}^t is the size of the j th firm in the i th industry at time t ; $S_{ij}^{t+\Delta}$ is its size at time $t+\Delta$; \bar{e} is the average value of e_j , where e_j is the difference between the average annual growth rate of the j th innovator during the period from time t to time t_j and that of "other firms" of equivalent size (at time t) during the same period; and \bar{d} is the average value of d_j , where e_j+d_j is the difference between the average annual growth rate of the j th innovator during the period from time t_j to time $t+\Delta$ and that of "other firms" of equivalent size (at time t) during the same period. See the Appendix for the way in which the regressions described here are used to estimate the figures in the second row of this table.

^b No figures are computed in cases where there were only a few innovators. See note 23 and the Appendix for a discussion of the derivation of these figures.

Source: See the Appendix and Mansfield [17].

Letting $S_j^{t+\Delta}$ be the size (i.e., capacity) at time $t+\Delta$ of the j th innovator and $Q_j^{t+\Delta}$ be the average logarithm of the sizes at time $t+\Delta$ of the other firms that were equal in size to the j th innovator at time t , one can show that

$$(11) \quad (\ln S_j^{t+\Delta} - Q_j^{t+\Delta})/\Delta = e_j + [1 - (t_j - t)/\Delta]d_j.$$

To see this, consider the k th "other firm" of the same size as the j th innovator at time t . If r_{1k} is its average rate of growth between time t and time $t+j$, r_{2k} is its average rate of growth between time t_j and time $t+\Delta$, and $S_{jk}^{t+\Delta}$ is its size at time $t+\Delta$,

$$\ln S_{jk}^{t+\Delta} = \ln S_j^t + r_{1k}(t_j - t) + r_{2k}(t + \Delta - t_j).$$

Thus, if r_1 is the average value of r_{1k} and r_2 is the average value of r_{2k} ,

$$Q_j^{t+\Delta} = \ln S_j^t + r_1(t_j - t) + r_2(t + \Delta - t_j).$$

But by the definitions of e_j and d_j ,

$$\ln S_j^{t+\Delta} = \ln S_j^t + (r_1 + e_j)(t_j - t) + (r_2 + e_j + d_j)(t + \Delta - t_j).$$

Thus,

$$\ln S_j^{t+\Delta} - Q_j^{t+\Delta} = e_j\Delta + d_j(t + \Delta - t_j),$$

and equation (11) follows.

Letting \bar{e} and \bar{d} be the average values of e_j and d_j and assuming that $(e_j - \bar{e})$ and $(d_j - \bar{d})$ are statistically independent of $(t_j - t)/\Delta$, we have

$$(12) \quad (\ln S_j^{t+\Delta} - Q_j^{t+\Delta})/\Delta = \bar{e} + [1 - (t_j - t)/\Delta]\bar{d} + W_j,$$

where W_j can be treated as a random error term. Using equation (12) we can apply least-squares to obtain \bar{e} and \bar{d} .²³

The results (in Table 3) indicate that \bar{d} was always positive, but that the sign of \bar{e} varied. This means two things. First, in the period immediately before they introduced the innovations, there was no persistent tendency for the successful innovators to grow more rapidly than other comparable firms. In some cases they grew more rapidly, but in others they did not. Thus, their higher growth rate cannot be attributed to their preinnovation behavior. Second, in the period after they introduced the innovations their mean growth rate consistently exceeded that of other comparable firms by more than it had before their introduction—which is what one would expect.

If one makes the crude assumption that the pre-innovation difference in average growth rate between successful innovators and other firms would have been maintained from time t to time $t + \Delta$ if the innovations had not been introduced, \bar{d} measures the average effect of these successful innovations on a firm's growth rate during the relevant period. Based on this assumption, their average effect was to raise a firm's growth rate by 4–13 percentage points, depending on the particular time interval and industry. In view of the widespread interest in measures of the pay-

²³ To estimate $Q_j^{t+\Delta}$, we use the procedure described in the Appendix. In computing \bar{e} and \bar{d} , innovators that introduced more than one innovation had to be excluded (except in a few cases where the innovations were all introduced at the same time). These relatively few omissions are ignored, and we act as if we had the entire population of innovators in the analysis.

Of course, the assumption that $(e_j - \bar{e})$ and $(d_j - \bar{d})$ are statistically independent of $(t_j - t)/\Delta$ is rather bold. Some bias may result if d_j is higher immediately after the introduction of an innovation. If so $(d_j - \bar{d})$ and $1 - (t_j - t)/\Delta$ may be negatively correlated, and we would probably overestimate \bar{e} and underestimate \bar{d} .

Where there were only a few innovators, this assumption (and the one in the previous paragraph) seemed particularly risky and we did not compute values of \bar{e} and \bar{d} . But some preliminary work suggested that, had we done so, the results would have been much the same.

off from successful innovation, these estimates, despite their crudeness, should be useful. Of course, estimates of the effects of successful innovation on a firm's profits would be even more useful, but they lie outside the scope of this paper.²⁴

III. *Mobility within an Industry's Size Structure*

In recent years, economists have become quite interested in the amount of mobility in an industry—i.e., the extent to which firms change their relative positions in the size distribution. The importance of this characteristic of an industry has been pointed out by Adelman [1], Hart and Prais [13], Simon and Bonini [27], and others [22] [28]. This section measures the amount of mobility in several industries and constructs a simple model to help explain its observed variation. The results shed additional light on the process of firm growth, since the amount of mobility is obviously related to the amount of interfirm variation in growth rates.²⁵

To measure the amount of mobility in the i th industry during the t th period, suppose that we have a list of all firms that were in existence at both the beginning and end of the period. Suppose that a firm is chosen at random from this list. Then suppose that another firm is chosen at random from those that were 60–70 per cent as large as the first firm at the beginning of the period. The probability that the second (initially smaller) firm will be bigger than the first (initially larger) firm at the end of the period is a rough measure of the amount of mobility. Let this probability be P_{it} .²⁶

²⁴ Note that the successful innovators tend to be the large spenders on research. (For evidence on this score and discussions of the imitation process, see [16] [18] [19] [20].)

If we had complete, year-by-year data on each firm's size, we could compute \bar{e} and \bar{d} without making the assumption discussed in note 23. The differences in growth rates shown in Table 3 are averages over periods of 1–10 years after an innovation was introduced. Obviously, the effects of an innovation decrease as time goes on.

Finally, for the reason cited in note 23, the estimates of \bar{d} may be biased downward. On the other hand, in the petroleum industry in 1947–57, \bar{d} may be unduly affected by one firm and is probably too high. Note, too, that the observed differences in growth rate may still be due in part to other factors that are associated with a firm's willingness to innovate and the timing of the innovation.

²⁵ If Gibrat's law held and if $W_{ij}(t, \Delta)$ were normally distributed, the amount of mobility would be solely a function of the latter's variance. For this reason, its variance has sometimes been suggested as a measure of the amount of mobility. But, since Gibrat's law generally does not hold and then normal distribution is only an approximation, the measure discussed below seems preferable.

²⁶ The choice of 60–70 per cent is arbitrary. We could have experimented with alternative ranges, but the amount of clerical work involved would have been prohibitive. Note that this measure is based on all firms; if one were interested in the amount of mobility among the larger firms only, the measure could easily be modified to that end.

This measure is based solely on firms that survived until the end of the period. If we included all firms—regardless of whether or not they survived—the results would depend heavily on the death rate. Because the latter was already taken up in Section I, it seemed preferable to use

Table 1 contains estimates of P_{it} for various periods in the history of the steel, petroleum refining, and rubber tire industries. Because of the small number of firms, it was impossible to obtain meaningful estimates for the automobile industry. To help explain the considerable variation in P_{it} , we assume that

$$(13) \quad P_{it}(S) = h(S/(n_{it}\bar{S}_{it}), A_{it}, S_{it}^*/\bar{S}_{it}, n_{it}, \dots),$$

where $P_{it}(S)$ is the probability that a firm of size S at the beginning of the period will be smaller at the end of the period than a firm originally of size $.6S-.7S$, n_{it} is the number of firms in the industry at the beginning of the period, \bar{S}_{it} is their mean size, \bar{S}_{it} is their median size, S_{it}^* is the size of firm such that firms exceeding it accounted for one-half of the market, and A_{it} is the age of the industry.

What are the effects of these variables? First, the smaller firm's chance of overtaking the larger one will be inversely related to the initial difference between their market shares—which is proportional to $S/(n_{it}\bar{S}_{it})$. Second, as an industry grows older, stronger ties are established between firms and their customers, the technology becomes more settled, and the industry's structure tends to become more rigid. Thus, A_{it} —which is a proxy variable for these factors—is likely to be important.²⁷ Third, $P_{it}(S)$ is likely to be inversely related to the amount of concentration in the industry. Thus, n_{it} and S_{it}^*/\bar{S}_{it} (a convenient measure of the amount of inequality among firm sizes) are included.²⁸

this measure. If one is interested in results that include deaths, it is relatively easy to combine the findings in this Section with those in Section I.

Let $P_{it}'(S)$ be the probability that a firm initially of size S will be smaller at the end of the period than—or as small as—a firm that initially was 60–70 per cent of its size. If a firm dies, let its size be zero. Then

$$P_{it}'(S) = R_{it}(S) + [1 - R_{it}(S)][1 - R_{it}(S')]P_{it}(S),$$

where $R_{it}(S')$ is the probability that a firm of initial size, $.6S-.7S$, will die during the period. Since Section I B takes up $R_{it}(S)$ —and $R_{it}(S')$ —and this section analyzes $P_{it}(S)$, together they provide information regarding $P_{it}'(S)$.

²⁷ The age of an industry is a somewhat slippery concept. In 1896, Goodyear made the first U.S. tires for commercial vehicles. In 1859, oil production began in the United States. The production of iron began here in 1645. Using these years as estimates of the dates of birth of the industries, A_{it} was derived by subtracting them from the initial year of the i th period. Although the results seem reasonable, their crudeness should be obvious.

²⁸ Since we assume that the distribution of firms by size is log-normal, the obvious measure of their inequality is the variance of the logarithms of the firm sizes. It can be shown that the latter is equal to $\ln(S_{it}^*/\bar{S}_{it})$. Thus, our measure—which is convenient because it allows some terms in equation (15) to be collected—is a monotonic increasing function of the variance.

The chief reason for using a measure of inequality of firm sizes plus the number of firms as a measure of concentration is convenience. For some disadvantages in the use of such measures, see [2]. For some evidence that increases in concentration are associated with decreases in mobility, see [15]. Of course, one would expect this variable to be important because where markets are highly concentrated it is more likely that discipline can and will be maintained to see to it that firms remain in about the same relative positions. E.g., there may be explicit or tacit agreements to share markets, each firm maintaining a certain per cent of the total.

Since the effects of these variables are likely to be multiplicative, we assume that

$$(14) \quad P_{it}(S) = \beta_0 [S / (n_{it} \bar{S}_{it})]^{-\beta_1} A_{it}^{-\beta_2} (S_{it}^* / \bar{S}_{it})^{-\beta_3} n_{it}^{\beta_4} Z_{it}''$$

where Z_{it}'' is a random error term and the β 's are presumed to be positive. Assuming again that the distribution of firms by size is log-normal, we have:

$$\begin{aligned} P_{it} &= \int_0^\infty P_{it}(S) \rho_{it}(S) dS \\ &= \beta_0 \left[\int_0^\infty S^{-\beta_1} \rho_{it}(S) dS \right] \bar{S}_{it}^{\beta_1} A_{it}^{-\beta_2} (S_{it}^* / \bar{S}_{it})^{-\beta_3} n_{it}^{\beta_4 + \beta_1} Z_{it}'' \\ (15) \quad P_{it} &= \beta_0 (1 + V_{it}^2)^{\beta_1(1+\beta_1)/2 - \beta_3} A_{it}^{-\beta_2} n_{it}^{\beta_4 + \beta_1} Z_{it}'' \end{aligned}$$

To see how well this model can represent the data, we take logarithms of both sides of equation (15), and using the data in Table 1, we obtain least-squares estimates of the coefficients. The results are:

$$(16) \quad \ln P_{it} = - .55 - .57 \ln (1 + V_{it}^2) - .15 \ln A_{it} + .29 \ln n_{it},$$

(.20)
(.07)
(.08)

where the quantities in parentheses are standard errors and $\ln Z_{it}''$ is omitted. Figure 2 shows that equation (16) can explain much of the variation in $\ln P_{it}$, the coefficient of correlation (corrected for degrees of freedom) being about .90. All of the regression coefficients have the expected signs and are statistically significant at the .05 level. Thus, what evidence we have seems to be quite consistent with the model. Indeed, it fits the data surprisingly well.²⁹

IV. Concluding Remarks

A. Limitations

Some of the limitations of this study are the following: First, the empirical results in Sections I and III are based on relatively few ob-

²⁹ The expression in equation (15) is not a very obvious one. E.g., it is not obvious (at least to me) that $\ln P_{it}$ should be a linear function of $\ln (1 + V_{it}^2)$. Consequently, it is all the more satisfying that this function turns out to be such a good representation of the data.

There is some evidence that the variability of firm growth rates increases with the industry's over-all rate of growth [15]. Of course, A_{it} and the industry's growth rate are liable to be related in general. But in the cases used here, there is no correlation between the two variables. Consequently, the observed effects of A_{it} are not mere reflections of the effects of the industry's growth rate.

Another factor that may be important is the extent to which the smaller firms tend to be the innovators. In addition, Hart and Prais [13] provide some evidence that there is more mobility during depressions, but this may be due to the differences among industries in the extent to which sales fall during a recession. Our data—which do not lump all industries together—do not show any obvious signs of such a tendency.

In deriving equation (15), we presume that $P_{it}(S)$ exists for all S . But in some cases there are no firms 60–70 per cent as large as another firm. Thus, strictly speaking, we should use the size distribution of firms where it exists.

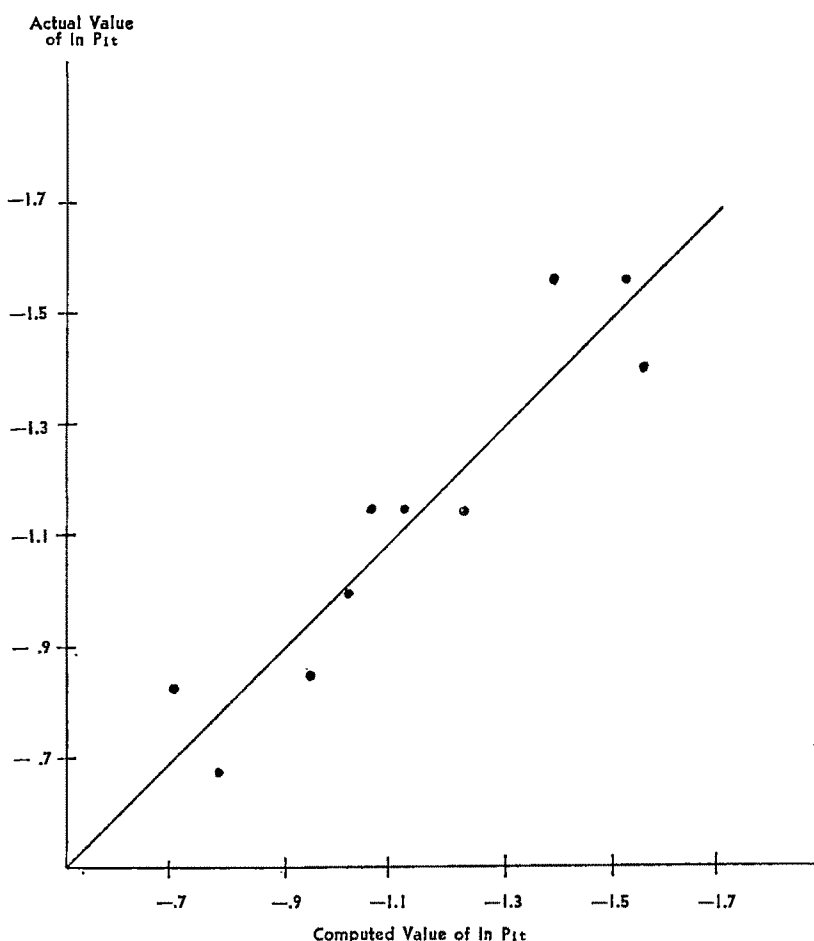


FIGURE 2. PLOT OF ACTUAL VALUES OF P_{it} AGAINST THOSE COMPUTED FROM EQUATION (16), STEEL, PETROLEUM, AND RUBBER TIRE INDUSTRIES, SELECTED PERIODS.

Source: Table 1 and equation (16). P_{it} is the probability that a randomly drawn firm in the i th industry will be smaller at the end of the t th period than another firm drawn randomly from those 60-70 per cent of its size at the beginning of the t th period.

servations. Considerable work was required to obtain even this small number because each observation is based on a large amount of relatively inaccessible data. But regardless of the reasons, the small number of industries and time periods results in fairly substantial sampling errors and obvious dangers of bias.

Second, the basic data in Table 1 are often very rough. The estimates of E_{it} , R_{it} , C_{it} , Π_{it} , A_{it} , and $\bar{S}_{it}/\hat{S}_{it}$ are based on the rather crude assumptions described in the Appendix. Unfortunately, no better data could be found. To the extent that they are distributed randomly, the

errors of measurement in the exogenous variables tend to bias the estimates of the coefficients in equations (3), (7), and (16) toward zero.

Third, the models in Sections I and III are obviously oversimplified. The small number of observations, as well as measurement problems and lack of data, limited the number of explanatory variables that could be included. One other explanatory variable—the length of the time period—was used initially in equations (3), (7), and (16), and its effect turned out to be nonsignificant.³⁰ Note too that the residuals in these equations may not be entirely independent because of the effects of factors that persist in a given industry or time period.

Fourth, the estimating procedures are sometimes rough. In Section II, the computed values of \bar{e} and \bar{d} are based on a rather bold assumption. In Section I, there is probably some least-squares bias toward zero in the estimates of the α 's and ν 's because Π_{it} is inversely related to E_{it} and directly related to R_{it} . But in the case of α_2 and ν_2 , this bias should not be very large, and considering the quality of the basic data, it did not seem worthwhile to use more complicated estimating procedures.³¹

B. *Summary and Conclusions*

Despite their limitations, the results contribute in at least four ways to a better understanding of the processes of firm formation, growth, and decline. First, they help to gauge the effects of an industry's profitability, capital requirements, and minimum efficient size of firm on its rates of entry and exit. For example, they suggest that the entry rate would increase by at least 60 per cent if an industry's profitability doubled and that it would decrease by at least 7 per cent if its capital requirements doubled. Similarly, they suggest that the exit rate would decrease by at least 15 per cent if an industry's profitability doubled or if the ratio of the average size of firm to the minimum efficient size of firm doubled.

³⁰ Of course, the exclusion of important factors can create biases of various sorts. E.g., it is possible that C_{it} is correlated with other barriers to entry and that consequently its effects on E_{it} are overstated.

³¹ For an elementary discussion of least-squares bias of this sort, see [5]. To evaluate the bias, we first formed a complete system of equations by adding to equations (3) and (7) a third equation in which $\ln \Pi_{it}$ is represented as a linear function of $\ln E_{it}$, $\ln R_{it}$, $\ln \Pi_{it(t-1)}$, an unspecified exogenous variable, and an error term. As noted in the text, the coefficient of $\ln E_{it}$ in the third equation is assumed to be negative and the coefficient of $\ln R_{it}$ is assumed to be positive. What we have in mind is that the rate of change of Π_{it} (i.e., $\Pi_{it}/\Pi_{it(t-1)}$) is an increasing function of R_{it} , a decreasing function of E_{it} , and a function of some other (unspecified) exogenous variable. Next, we assumed that the residuals in the equations were uncorrelated (which is consistent with the data we have), and we assumed for simplicity that the covariances of the exogenous variables were all zero.

Under these conditions we found that the asymptotic bias in the estimates of the α 's and ν 's was always towards zero and that it was likely to be a small percentage of the estimates of α_2 and ν_2 . But this only holds in the limit and our assumptions are obviously rough.

Second, the tests of several variants of Gibrat's law of proportionate effect reveal that, contrary to the law, smaller firms have relatively high death rates and those that survive tend to have higher and more variable growth rates than larger firms. Moreover, a simple theory is presented which may help to account for these deviations from the law of proportionate effect.

Third, evidence as to the effects of successful innovations on a firm's rate of growth indicate that on the average the successful innovators in these industries grew about twice as rapidly as other comparable firms during the relevant period.³² In terms of short-term growth, the rewards for successful innovation seem to have been substantial, particularly for smaller firms.

Fourth, a simple model is presented to help explain variation among industries and over time in the extent to which firms change their relative positions in the size distribution of an industry. Our tentative findings indicate that the amount of mobility in an industry depends significantly on its age and its market structure, the model fitting data for several industries surprisingly well.

In recent years, economists have begun to study in a systematic way the changes over time in an industry's composition and structure, but because so little econometric work has been carried out, they have had relatively little to go on in constructing models to represent the relevant dynamic processes. For this reason and others, they have not proceeded far beyond the simplest sorts of stochastic models, e.g., Markov processes with constant transition probabilities based on Gibrat's law.³³ By providing some of the necessary econometric results, this paper should contribute to the development of a richer theory of the dynamic aspects of industrial structure.

APPENDIX: DATA AND METHODS

First, this Appendix presents the basic data regarding the birth, growth, and death of firms in the steel, petroleum refining, and rubber tire industries. (The data for the automobile industry pertain to only a small number of firms and are readily available in the annual statistical issues of *Automobile Industries*.) These data can be summarized most easily in the form of transition matrices—shown in Tables A, B, and C. If all firms are classified into n size classes, the ij th element of the transition matrix for a particular period ($i, j = 1, \dots, n$) is the number of firms in the i th class at the beginning of the period that were in the j th class at the end. Despite the pioneering work of Hart and Prais [13] and Adelman [1], few such transition matrices have been constructed.

³² The average growth rate in the first row of Table 3 is approximately double the average growth rate in the second row.

³³ Judging by our results and the transition matrices in the Appendix, the assumption—sometimes made—that the transition probabilities are constant over time is likely to be a poor one; e.g., the extent of “mixing” [27] seems to decrease with time.

Table A contains transition matrices for the steel industry for 1916-26, 1926-35, 1935-45, and 1945-54; Table B, for petroleum refining for 1921-27, 1927-37, 1937-47, and 1947-57; Table C, for the rubber tire industry for 1937-45 and 1945-52. Some of these periods were dictated by the availability of data; others were chosen rather arbitrarily. A firm's size is measured in terms of gross tons of ingot capacity (steel), daily crude capacity (petroleum), or employment (tires). In steel and petroleum, all firms with ingot capacity or crude capacity are included. In rubber tires, all firms cited in the *Rubber Red Book* as manufacturers of rubber tires are included.

The basic data were derived from the *Directory of the American Iron and Steel Institute* [3] Bureau of Mines bulletins [6], the *Petroleum Refiner*, the *Rubber Red Book*, *Moody's Industrials*, and correspondence with particular firms. To construct each matrix, we obtained from these sources complete lists of the firms in the industry at the beginning and end of the period and

TABLE A—TRANSITION MATRICES FOR THE STEEL INDUSTRY,
1916-26, 1926-35, 1935-45, AND 1945-54*

Capacity (Tons) at Beginning of the Period	Ingot Capacity (Tons) at End of the Period								
	Total	Disap- pearances	Under 4,000	4,000- 15,999	16,000- 63,999	64,000- 255,999	256,000- 1,023,999	1,024,000 4,095,999	Over 4,095,999
[Number of firms] 1916-26									
Entrants	51	—	10	10	15	12	4	0	0
Under 4,000	10	2	4	3	1	0	0	0	0
4,000-15,999	17	5	1	6	4	1	0	0	0
16,000-63,999	14	1	0	1	11	1	0	0	0
64,000-255,999	31	6	0	0	0	16	8	1	0
256,000-1,023,999	10	2	0	0	0	0	7	1	0
1,024,000-4,095,999	7	2	0	0	0	0	0	4	1
Over 4,095,999	1	0	0	0	0	0	0	0	1
1926-35									
Entrants	10	—	0	4	2	2	2	0	0
Under 4,000	14	11	3	0	0	0	0	0	0
4,000-15,999	20	11	1	7	1	0	0	0	0
16,000-63,999	30	17	0	1	10	1	0	1	0
64,000-255,999	31	12	0	0	1	13	5	0	0
256,000-1,023,999	19	5	0	0	0	0	11	3	0
1,024,000-4,095,999	6	0	0	0	0	0	1	4	1
Over 4,095,999	2	0	0	0	0	0	0	0	2
1935-45									
Entrants	15	—	0	2	7	3	3	0	0
Under 4,000	4	4	0	0	0	0	0	0	0
4,000-15,999	12	0	0	5	6	1	0	0	0
16,000-63,999	14	4	0	1	6	3	0	0	0
64,000-255,999	16	0	0	0	0	14	2	0	0
256,000-1,023,999	19	3	0	0	0	0	14	2	0
1,024,000-4,095,999	8	1	0	0	0	0	1	5	1
Over 4,095,999	3	0	0	0	0	0	0	0	3
1945-54									
Entrants	14	—	1	1	6	2	3	1	0
Under 4,000	0	0	0	0	0	0	0	0	0
4,000-15,999	9	2	0	4	3	0	0	0	0
16,000-63,999	20	1	0	0	14	4	1	0	0
64,000-255,999	21	6	0	0	1	12	2	0	0
256,000-1,023,999	20	3	0	0	0	0	12	5	0
1,024,000-4,095,999	7	0	0	0	0	0	0	3	4
Over 4,095,999	4	0	0	0	0	0	0	0	4

* The first column (labeled "total") contains the number of firms in each size class at the beginning of the period. For each beginning-of-period size class (i.e., each row), the remaining columns show the end-of-period size distribution.

TABLE B—TRANSITION MATRICES FOR THE PETROLEUM REFINING INDUSTRY, 1921-27, 1927-37, 1937-47, AND 1947-57^a

Daily Capacity (Bbls.) at Beginning of the Period	Daily Capacity (Bbls.) at End of the Period							
	Total	Disappearances	Under 1,000	1,000-3,999	4,000-15,999	16,000-63,999	64,000-255,999	Over 255,999
	[Number of firms] 1921-27							
Entrants	207	—	75	92	36	4	0	0
Under 1,000	58	34	13	6	4	1	0	0
1,000-3,999	173	119	3	34	15	2	0	0
4,000-15,999	61	29	1	5	17	9	0	0
16,000-63,999	15	4	0	0	0	7	4	0
64,000-255,999	6	0	0	0	0	0	6	0
Over 255,999	1	0	0	0	0	0	0	1
	1927-37							
Entrants	153	—	44	62	43	3	1	0
Under 1,000	92	74	8	8	2	0	0	0
1,000-3,999	137	94	1	27	14	0	1	0
4,000-15,999	72	40	1	6	19	6	0	0
16,000-63,999	23	11	0	1	2	5	4	0
64,000-255,999	10	0	0	0	0	0	6	4
Over 255,999	1	0	0	0	0	0	0	1
	1937-47							
Entrants	210	—	83	75	43	9	0	0
Under 1,000	54	26	21	6	1	0	0	0
1,000-3,999	104	53	4	34	13	0	0	0
4,000-15,999	80	30	1	7	27	15	0	0
16,000-63,999	14	3	0	0	2	8	1	0
64,000-255,999	12	1	0	0	0	0	8	3
Over 255,999	5	0	0	0	0	0	0	5
	1947-57							
Entrants	90	—	7	33	31	16	3	0
Under 1,000	109	98	4	5	2	0	0	0
1,000-3,999	122	95	0	16	10	1	0	0
4,000-15,999	86	54	0	3	22	7	0	0
16,000-63,999	32	13	0	0	2	12	5	0
64,000-255,999	9	0	0	0	0	0	5	4
Over 255,999	8	0	0	0	0	0	0	8

^a See note a, Table A. Both domestic and foreign capacity owned by firms are included.

the size of each firm at both points in time. With this information at hand, it was a simple matter to construct each matrix.

Four points should be noted regarding these data: (1) When a firm's name appeared on a list for the first time, we assumed that it entered the industry during the preceding period. Similarly a firm is regarded as having left the industry when its name disappeared from the lists. Although we tried to keep track of mere changes in company names (where changes in ownership were not involved), some were undoubtedly missed and hence the entry and exit rates may be inflated. But on the other hand, they may also be underestimated because some firms may have kept the same names despite a change in ownership. (Of course, for large corporations, changes in ownership occur to some extent all the time and are not very important unless changes in the control of the firm are involved.) Unfortunately, the available data force us to use a firm's name as an indicator of its ownership. But one would certainly expect the resulting rates of entry and exit to be closely related to the actual ones. Of course, if they are proportional on the average, there is no problem. But this is unlikely.

(2) When mergers occurred, they were treated as if the largest firm involved in the merger bought the others. That is, the resulting firm was regarded as a continuation of the largest of its components, and the other parties to the merger were treated as if they went out of business. This procedure is arbitrary, but no other seems clearly preferable. Fortunately, it should not affect the results very substantially. Note too that some of the entrants may have "purchased" existing facilities by merging with established firms. (3) Some members of the industry did not provide data regarding their size at some of these points in time, and there was no choice but to omit them during the relevant periods. This should be of little consequence because only a few such cases were encountered. Note that this accounts for the fact that the number entering a particular size class sometimes differs from the number in that size class at the beginning of the next period. (4) The steel data pertain to all firms with ingot capacity (open hearth, bessemer, or electric) and the petroleum data pertain to all firms with crude capacity (operating or shut-down). For some purposes, it might have been preferable to have excluded electric furnaces and shut-down capacity.

Second, we describe the way in which the data in Table 1 regarding Π_{it} , C_{it} , V_{it} ,² and $\bar{S}_{it}/\hat{S}_{it}$ were derived. To estimate Π_{it} , we needed figures on profits after taxes as a percentage of net worth in each industry. For rubber tires, the data came from the *Statistics of Income*. For petroleum, they came from Epstein [10], De Chazeau and Kahn [9], and the *Statistics of Income*. For steel, they came from Schroeder [26], but some adjustment was made for differences in concept. The data for automobiles came from *Moody's* and pertained to the largest five firms. The 1925-57 data for all manufacturing came from the First National City Bank of N.Y. (as reported in the 1959

TABLE C—TRANSITION MATRICES FOR THE RUBBER TIRE INDUSTRY,
1937-45 AND 1945-52^a

Number of People Employed at Beginning of the Period	Number Employed at End of the Period								
	Total	Disap- pearances	Under 40	40- 159	160- 639	640- 2,559	2,560- 10,239	10,240- 40,959	Over, 40,959
[Number of firms] 1937-45									
Entrants	22	0	4	12	4	2	0	0	0
Under 40	6	4	0	2	0	0	0	0	0
40-159	13	6	0	3	4	0	0	0	0
160-639	13	2	0	0	5	6	0	0	0
640-2,559	11	2	0	0	0	6	3	0	0
2,560-10,239	2	1	0	0	0	0	1	0	0
10,240-40,959	3	0	0	0	0	0	0	0	3
Over 40,959	1	0	0	0	0	0	0	0	1
1945-52									
Entrants	39	0	16	15	6	2	0	0	0
Under 40	4	4	0	0	0	0	0	0	0
40-159	17	14	0	2	1	0	0	0	0
160-639	12	3	0	1	6	2	0	0	0
640-2,559	14	5	0	0	1	7	1	0	0
2,560-10,239	6	0	0	0	0	0	6	0	0
10,240-40,959	0	0	0	0	0	0	0	0	0
Over 40,959	4	0	0	0	0	0	0	0	4

^a See note a, Table A. In each year a few firms had to be excluded because the *Rubber Red Book* provided no employment figures for them.

Petroleum Facts and Figures). The earlier data for all manufacturing came from Epstein [10].

In many respects, the data are rough. An unweighted average of the profit rates of firms above the minimum efficient size would seem appropriate here. But judging by Bain's figures [4], there is little correlation between size and profit rate in steel, petroleum, and tires; and firms above the minimum efficient size account for almost all of the assets. Thus the weighted averages that we use should be fairly good approximations. In autos, there seems to be some correlation of this sort and consequently we use an unweighted average. This results in a much lower figure for autos than the weighted average that is generally published. For 1949-59, the figure seems much too low, but it could be appreciably higher without affecting the results substantially.

To obtain C_{it} in each industry, we multiplied Bain's estimate [4] of the required investment by the ratio of the average size of firm at the beginning of the i th period (measured in terms of capacity in steel and petroleum, production in automobiles, and employment in tires) to the average size of firm in 1945 (steel), 1947 (petroleum), 1949 (autos), or 1945 (tires). (By Bain's estimate we mean the average of the upper and lower limit he gives. It includes initial losses in the case of the automobile industry.) If the ratio of the average size to the minimum efficient size of firm remained constant over time in each industry and if the necessary investment varied in proportion to the minimum efficient size, this would be all right. This is probably as sensible as any of the simple, operational assumptions we could make, but its crudeness is obvious.

Note that C_{it} —even if it were accurately measured—would not necessarily be the minimum investment for an entrant because the typical entrant was below the minimum efficient size. For the same reason, the typical entrant could not expect to earn profits of Π_{it} . But it seems reasonable that the expected profitability of the typical entrant would be closely related to Π_{it} . And since the average size of an entrant is a relatively constant proportion of the minimum efficient size in these cases, it is pretty certain that the average capital requirements would be closely related to C_{it} .

The estimates of V_{it} ² were obtained from the frequency distributions in Tables A-C and from *Moody's* figures on assets of automobile firms. To estimate the ratio of the average size of firm to the minimum efficient size, we divided Bain's estimate [4] of the minimum efficient size in each industry into the average size of firm in 1947 (petroleum), 1945 (steel and tires), or 1949 (autos). The estimates of the minimum efficient size were 1,000,000 net tons of capacity (steel), 120,000 barrels of capacity (petroleum), 1½ per cent of total employment (tires), and 10 per cent of total production (autos). The average size of firm in each case came from Tables A-C and *Automotive Industries*. Then we assumed that this ratio was constant over time. Note that the minimum efficient size for the production of specialty items (and in certain locations) may be less than this. This may be quite important. For further comments, see note 18. The crudeness of these estimates of $\bar{S}_{it}/\hat{S}_{it}$ is obvious.

Third, we describe the way in which firms were classified by S_{it} and $S_{it}^{t+\Delta}/S_{it}$ in the χ^2 tests in Table 2. In the tests where deaths were included, the following size classes were used. In steel, we classified firms by their value of S_{it} into four classes: 4,000–15,999 tons, 16,000–63,999 tons, 64,000–255,999 tons, and 256,000–4,096,000 tons. In tires, we used four classes: 20–79 men, 80–159 men, 160–639 men, and 640–5,119 men. And in petroleum, there were four classes: 500–999 barrels, 2,000–3,999 barrels, 8,000–15,999 barrels, and 32,000–511,999 barrels. To cut down the computations involved, only firms in these classes were included. Thus, some of the largest and smallest firms were omitted in steel and tires, and some small, medium-sized, and large firms were excluded in petroleum. But had all firms been included, the results would almost certainly have been much the same.

In all cases, the firms in a size class were divided into three groups—those where $S_{it}^{t+\Delta}/S_{it}$ was less than .50, between .50 and 1.50, and 1.50 or more. These classes were chosen so that the expected number of firms in each cell of the contingency table would be five or more. (According to a well-known rule of thumb, the expected number in each cell should be this large.) This did not always turn out to be the case, but further work showed that the results would stand up if cells were combined.

With the following exceptions, these same classifications were used in the tests where deaths were excluded. In steel and tires, the two smallest size classes were combined. In some cases, firms were classified into groups where $S_{it}^{t+\Delta}/S_{it}$ was less than 1.00, between 1.00 and 2.00, and 2.00 or more. These changes were made to meet the rule of thumb noted above. Despite these changes, the expected number of firms in some cells was not quite five, but the results would not be affected if some cells were combined.

Fourth, we describe the way in which the innovators in Section II B were identified. The first step was to write trade associations and trade journals in each industry and to ask for a list of the important processes and products first introduced in the industry since 1918. Usable questionnaires were filled out and returned by one trade association and three trade journals. There was evidence that the respondents went to considerable pains in preparing them. The number of innovations of each type (process and product) that were provided ranged from about 20 to 40. In all, about 150 innovations were listed in the replies.

The second step was to determine what firm first introduced each innovation commercially and when this took place. To determine the date and to identify the innovator, articles in trade and technical journals were consulted. When doubts arose, letters were sent to equipment producers and members of the industry to determine whether the information was correct. Members of the Carnegie Institute of Technology engineering faculty were also consulted. Ultimately, the required information was obtained for over 80 per cent of the innovations. These data appear in [17].

Finally, we describe the way in which the average annual growth rate of the "other firms" in Table 3 was computed. If the innovator was smaller than the sizes given in the second sentence in note 18, we used the following

technique to estimate the average annual growth rate of the other firms of its initial size. We assumed that, for the j th "other firm" in the i th industry, $\ln S_{ij}^{t+\Delta} = a_i + b_i \ln S_{ij}^t + Z_{ij}''$, where Z_{ij}'' is a random error term. A equation of this form fits the data for the smaller firms quite well. We then obtained least-squares estimates (shown in Table 3) of a_i and b_i ; and taking each innovator, we used this regression to estimate the average value of $\ln S_{ij}^{t+\Delta}$ for the "other firms" corresponding to its value of S_{ij}^t . Deducting its value of $\ln S_{ij}^t$ from this computed average value and dividing the result by Δ , we obtain an estimate of the average annual growth rate of "other firms" of the same original size as this innovator.

If the innovator was larger than the sizes given in note 18, we had to use another method because the regressions do not always fit the larger firms very well. In these cases, we used the average annual growth rate of the "other firms" larger than the sizes given in note 18. Finally, to obtain the figures in the second row of Table 3, we took the resulting average growth rate for the "other firms" corresponding to each innovator during the period (whether or not it was above the sizes in note 18) and averaged them.

REFERENCES

1. I. Adelman, "A Stochastic Process Analysis of the Size Distribution of Firms," *Jour. Am. Stat. Assoc.*, Dec. 1958, 58, 893-904.
2. M. Adelman, "Differential Rates and Changes in Concentration," *Rev. Econ. Stat.*, Feb. 1959, 41, 68-69.
3. American Iron and Steel Institute, *Directory of Iron and Steel Works*, New York, 1916, 1926, 1935, 1945, and 1954.
4. J. Bain, *Barriers to New Competition*. Cambridge 1956.
5. J. Bronfenbrenner, "Source and Size of Least-Square Bias in a Two-Equation Model," in W. C. Hood and T. C. Koopmans, ed., *Studies in Econometric Method*. New York 1953.
6. Bureau of Mines, *Petroleum Refineries, including Cracking Plants in the United States*, Washington, Jan. 1, 1937, 1947, and 1957.
7. B. Churchill, "Rise in the Business Population," *Surv. Curr. Bus.*, May 1959, 39, 15-19.
8. N. Collins and L. Preston, "The Size Structure of Industrial Firms, 1909-58," *Am. Econ. Rev.*, Dec. 1961, 51, 986-1011.
9. M. De Chazeau and A. Kahn, *Integration and Competition in the Petroleum Industry*. New Haven 1959.
10. R. Epstein, *Industrial Profits in the United States*. New York 1934.
11. C. Ferguson, "The Relationship of Business Size to Stability: An Empirical Approach," *Jour. Ind. Econ.*, Nov. 1960, 9, 43-62.
12. R. Gibrat, *Les inégalités économiques*. Paris 1931.
13. P. Hart and S. Prais, "The Analysis of Business Concentration: A Statistical Approach," *Jour. Royal Stat. Soc., Ser. A*, 1956, 119, 150-81.
14. A. Hoggatt, "A Simulation Study of an Economic Model," in *Contributions to Scientific Research in Management*. Los Angeles 1959.
15. S. Hymer and B. Pashigian, "Firm Size and Rate of Growth" (abstract), *Econometrica*, Apr. 1959, 27, 315.

16. E. Mansfield, "Technical Change and the Rate of Imitation," *Econometrica*, Oct. 1961, 29, 741-66.
17. ———, "Size of Firm, Market Structure, and Innovation," *Jour. Pol. Econ.* (forthcoming).
18. ———, "The Expenditures of the Firm on Research and Development," Cowles Foundation Discussion Paper No. 136.
19. ———, "The Speed of Response of Firms to New Techniques," *Quart. Jour. Econ.* (forthcoming).
20. ——— and C. Hensley, "The Logistic Process: The Stochastic Epidemic Curve and Applications," *Jour. Royal Stat. Soc. Ser. B*, 1960, 22, 332-37.
21. A. Marshall, *Principles of Economics*. London 1916.
22. J. Miller, "Measures of Monopoly Power and Concentration: Their Economic Significance," *Business Concentration and Price Policy*. Princeton 1955.
23. A. Oxenfeldt, *New Firms and Free Enterprise*. Washington 1943.
24. A. Papandrea and J. Wheeler, *Competition and Its Regulation*. New York 1954.
25. E. Penrose, *The Theory of the Growth of the Firm*. New York 1959.
26. A. Schroeder, *The Growth of the Major Steel Companies*. Baltimore 1953.
27. H. Simon and C. Bonini, "The Size Distribution of Business Firms," *Am. Econ. Rev.*, Sept. 1958, 48, 607-17.
28. G. Stigler, "Introduction," *Business Concentration and Price Policy*. Princeton 1955.
29. ———, "The Economics of Scale," *Jour. Law and Econ.*, Oct. 1958, 1, 54-71.
30. R. Triffin, *Monopolistic Competition and General Equilibrium Theory*. Cambridge 1941.
31. H. Vatter, "The Closure of Entry in the American Automobile Industry," *Oxford Econ. Papers*, Oct. 1952, 4, 213-34.

BEHAVIOR OF THE FIRM UNDER REGULATORY CONSTRAINT

By HARVEY AVERCH AND LELAND L. JOHNSON*

In judging the level of prices charged by firms for services subject to public control, government regulatory agencies commonly employ a "fair rate of return" criterion: After the firm subtracts its operating expenses from gross revenues, the remaining net revenue should be just sufficient to compensate the firm for its investment in plant and equipment. If the rate of return, computed as the ratio of net revenue to the value of plant and equipment (the rate base), is judged to be excessive, pressure is brought to bear on the firm to reduce prices. If the rate is considered to be too low, the firm is permitted to increase prices.

The purpose here is (a) to develop a theory of the monopoly firm seeking to maximize profit but subject to such a constraint on its rate of return, and (b) to apply the model to one particular regulated industry—the domestic telephone and telegraph industry. We conclude in the theoretical analysis that a "regulatory bias" operates in the following manner: (1) The firm does not equate marginal rates of factor substitution to the ratio of factor costs; therefore the firm operates inefficiently in the sense that (social) cost is not minimized at the output it selects. (2) The firm has an incentive to expand into other regulated markets, even if it operates at a (long-run) loss in these markets; therefore, it may drive out other firms, or discourage their entry into these other markets, even though the competing firms may be lower-cost producers. Applying the theoretical analysis to the telephone and telegraph industry, we find that the model does raise issues relevant to evaluating market behavior.

I. The Single-Market Model

First we shall consider a geometrical and a mathematical framework showing the effect of the regulatory constraint on the cost curves of the

*The authors, research economists at The RAND Corporation, are indebted to Kenneth Arrow who suggested a mathematical framework when the ideas in this paper were in an early state of development. Any views expressed in this paper are those of the authors. They should not be interpreted as reflecting the views of The RAND Corporation or the official opinion or policy of any of its governmental or private research sponsors. An earlier version of this paper was presented at the Econometric Society meetings on December 28, 1961 in New York.

firm employing two factors. The essential characteristic to be demonstrated is: if the rate of return allowed by the regulatory agency is greater than the cost of capital but is less than the rate of return that would be enjoyed by the firm were it free to maximize profit without regulatory constraint, then the firm will substitute capital for the other factor of production and operate at an output where cost is not minimized.

Figure 1 denotes the firm's production where capital x_1 is plotted on the horizontal axis and labor x_2 on the vertical axis. The market or

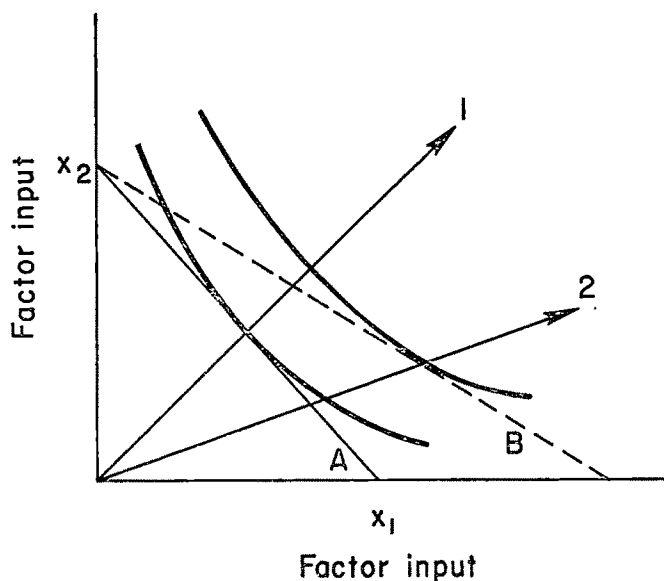


FIGURE 1

"social" cost of capital and labor generates the isocost curve *A* and the *unregulated* firm would move along expansion path 1 where market cost is minimized for any given output. With regulation, however, the cost of capital to the firm—the "private" cost—is no longer equal to market cost. For each additional unit of capital input, the firm is permitted to earn a profit (equal to the difference between the market cost of capital and rate of return allowed by the regulatory agency) that it otherwise would have to forego. Therefore, private cost is less than market cost by an amount equal to this difference. The effect of regulation is analogous to that of changing the relative prices of capital x_1 and labor x_2 : isocost curve *B* becomes relevant and the firm moves along expansion path 2—a path along which market cost is not minimized for any given output. The firm finds path 2 advantageous simply because it is along

that path that the firm is able to maximize total profit given the constraint on its rate of return.

Treating the problem mathematically, we now consider a monopoly producing a single homogeneous product using two inputs. Define

$$\begin{aligned} z &= z(x_1, x_2), & x_1 &\geq 0, & x_2 &\geq 0 \\ (1) \quad \frac{\partial z}{\partial x_1} &> 0, & \frac{\partial z}{\partial x_2} &> 0, \\ z(0, x_2) &= z(x_1, 0) = 0 \end{aligned}$$

as the firm's production function. That is, marginal products are positive, and production requires both inputs.

We write the inverse demand function as

$$(2) \quad p = p(z).$$

Profit is defined by

$$(3) \quad \pi = pz - r_1x_1 - r_2x_2$$

where the r_i ($i=1, 2$) are factor costs presumed constant for all levels of factor input.

Let x_1 denote the physical quantity of plant and equipment in the rate base, c_1 the acquisition cost per unit of plant and equipment in the rate base, u_1 the value of depreciation of plant and equipment during a time period in question, and U_1 the cumulative value of depreciation. Let x_2 denote the quantity of labor input and r_2 the labor wage rate. The regulatory constraint is:

$$(4) \quad \frac{pz - r_2x_2 - u_1}{c_1x_1 - U_1} \leq s_1$$

where the profit net of labor cost and capital depreciation constitutes a percentage of the rate base (net of depreciation) no greater than a specified maximum s_1 .

For simplicity, we assume that depreciation (u_1 and U_1) is zero and we define capital so that its acquisition cost or value c_1 is equal to 1, i.e., the value of the rate base is equal to the physical quantity of capital.¹ The "cost of capital" r_1 (to be distinguished from the acquisition cost of plant and equipment measured by c_1) is the interest cost involved in holding plant and equipment. The allowable rate of return s_1 is the rate of return allowed by the regulatory agency on plant and equipment in order to compensate the firm for the cost of capital—the interest

¹ Alternatively, one could construct a dynamic rather than a static model and consider positive values for depreciation; but to do so would complicate the results without contributing much additional insight into the behavior of the firm.

cost—involved in holding plant and equipment. Therefore, the constraint may be rewritten as

$$(5) \quad \frac{pz - r_2x_2}{x_1} \leq s_1$$

or

$$(6) \quad pz - s_1x_1 - r_2x_2 \leq 0.$$

For $s_1 < r_1$, the allowable rate of return is less than the actual cost of capital, and the firm withdraws from the market. For, from (6), if $x_1 > 0$,

$$pz - r_1x_1 - r_2x_2 = pz - s_1x_1 + (s_1 - r_1)x_1 - r_2x_2 \leq (s_1 - r_1)x_1 < 0.$$

If $x_1 = 0$, $\pi = -r_2x_2$ from (3), and the firm can further reduce its loss by setting $x_2 = 0$. Then $\pi = 0$. Therefore, $s_1 \geq r_1$; the allowable rate of return must at least cover the actual cost of capital.

The problem then is to maximize (3) subject to (6).² Define the Lagrangian expression:

$$(7) \quad L(x_1, x_2, \lambda) = pz - r_1x_1 - r_2x_2 - \lambda[pz - s_1x_1 - r_2x_2].$$

The Kuhn-Tucker necessary conditions³ for a maximum at $\bar{x}_1, \bar{x}_2, \bar{\lambda}$ are

$$(8.1) \quad r_1 \geq (1 - \lambda) \left[p + z \frac{dp}{dz} \right] \frac{\partial z}{\partial x_1} + \lambda s_1, \quad x_1 \geq 0$$

$$(8.2) \quad r_1 > (1 - \lambda) \left[p + z \frac{dp}{dz} \right] \frac{\partial z}{\partial x_1} + \lambda s_1 \quad \text{implies} \quad \bar{x}_1 = 0$$

$$(8.3) \quad (1 - \lambda)r_2 \geq (1 - \lambda) \left[p + z \frac{dp}{dz} \right] \frac{\partial z}{\partial x_2}, \quad \bar{x}_2 \geq 0$$

$$(8.4) \quad (1 - \lambda)r_2 > (1 - \lambda) \left[p + z \frac{dp}{dz} \right] \frac{\partial z}{\partial x_2} \quad \text{implies} \quad \bar{x}_2 = 0$$

$$(8.5) \quad pz - s_1x_1 - r_2x_2 \leq 0, \quad \bar{\lambda} \geq 0$$

$$(8.6) \quad pz - r_2x_2 < s_1x_1 \quad \text{implies} \quad \bar{\lambda} = 0.$$

Assuming $\bar{\lambda} > 0$, it is clear from (8.1) that $\lambda = 1$ if and only if $r_1 = s_1$. If $\lambda = 1$, $r_1 = s_1$. This does not involve any variables, and it follows that any x_1, x_2 which satisfies (8.5) is a solution.

² Since (6) is an inequality, we are faced with a nonlinear programming problem. However, the similarity of the results to ordinary marginal conditions is obvious.

³ If the total revenue function, pz , is concave in the relevant range of operation, it is clear that the Kuhn-Tucker conditions in this case are also sufficient. Given a concave pz , it is possible to define the dynamic gradient process corresponding to the static Kuhn-Tucker conditions showing the firm's input variation over time. But we do not do this here since we are primarily interested in equilibrium and the optimal inputs under regulation.

For $s_1 > r_1$, which is the interesting case, it follows that $0 \leq \lambda < 1$: From (8.6), s_1 may be chosen large enough so that $\lambda = 0$ (i.e., at some high level of allowable rate of return s_1 , the value $x_1 (s_1 - r_1)$ exceeds the level of unconditionally maximized profit, and the constraint is ineffective). If we now let $s_1 \rightarrow r_1$, λ varies continuously, and since $\lambda \neq 1$, we have $0 < \lambda < 1$. For the unregulated monopoly, the marginal conditions are:

$$(9) \quad r_i = \left[p + z \frac{dp}{dz} \right] \frac{\partial z}{\partial x_i}, \quad (i = 1, 2).$$

Under conditions of effective regulatory constraint ($\lambda > 0$) equations (8.3) and (9) disclose that, as in the case of unregulated monopoly, the input of x_2 is such that its marginal cost r_2 is equal to its marginal value product. In contrast, equations (8.1) and (9) disclose that the input of x_1 is such that its marginal cost r_1 is greater than its marginal value product,⁴ i.e., its use is expanded beyond the point at which its marginal cost would be equal to its marginal value product.

From equations (8.1) and (8.3) when the equalities hold, the marginal rate of substitution of factor 1 for factor 2 is:

$$(10) \quad \frac{-dx_2}{dx_1} = \frac{r_1}{r_2} - \frac{\lambda}{(1 - \lambda)} \frac{(s_1 - r_1)}{r_2}.$$

Since

$$\frac{\lambda}{(1 - \lambda)} \frac{(s_1 - r_1)}{r_2} > 0, \quad \lambda > 0, \quad s_1 > r_1,$$

then

$$(11) \quad \frac{-dx_2}{dx_1} < \frac{r_1}{r_2}.$$

The firm adjusts to the constraint, then, by substituting capital for the cooperating factor and by expanding total output. Comparative equilibrium outputs are shown in Figure 2. If the regulated firm were constrained to move along the socially efficient expansion path 1 in Figure 1, it would operate at OC in Figure 2. Here price is slightly above

⁴ Clearly

$$\frac{r_1 - \lambda s_1}{1 - \lambda} = r_1 - \frac{\lambda}{1 - \lambda} (s_1 - r_1) \geq \left[p + z \frac{dp}{dz} \right] \frac{\partial z}{\partial x_1}.$$

Since $0 < \lambda < 1$, $s_1 > r_1$, it follows immediately that:

$$r_1 > \left[p + z \frac{dp}{dz} \right] \frac{\partial z}{\partial x_1}.$$

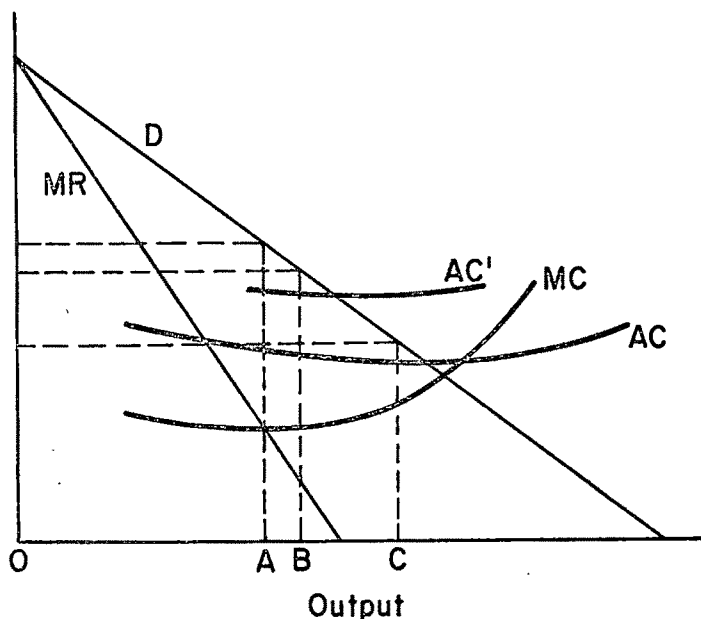


FIGURE 2

average cost AC to reflect the fact that $s_1 > r_1$ (profit is not entirely eliminated). Since the regulated firm moves along path 2, the social cost curve rises from AC to AC' , and the regulatory constraint is satisfied at the lower output OB . The effect of regulation is to force the firm to expand output from the unregulated position OA , but output does not expand to C because a portion of what would otherwise be profit is absorbed by cost. The extent to which regulation affects output depends upon the nature of the production function. If it involves fixed proportions, i.e., $\min\left(\frac{x_1}{a}, \frac{x_2}{b}\right)$, the regulated firm is constrained to the efficient expansion path and it moves all the way to OC . If the production function is linear and if the iso-output curves have a slope equal to $-\frac{r_1}{r_2}$, the firm could substitute x_1 for x_2 and, with no change in marginal rate of substitution, hold output constant. In this case it could remain at OA , the unregulated monopoly output, under the condition that at output OA

$$pz - s_1x_1 - r_2x_2 \leq 0, \quad x_2 = 0.$$

II. The Multimarket Case

Suppose that in addition to operating in a single market, the firm can also enter other regulated markets, and that the regulatory agency

bases its "fair rate of return" criterion on the firm's over-all value of plant and equipment for all markets taken together rather than computing a separate rate of return for each market. In this case the firm may have an incentive (that it would not have in the absence of regulation) to enter these other markets, even if the cost of so doing exceeds the additional revenues. Expanding into other markets may enable the firm to inflate its rate base to satisfy the constraint and permit it to earn a greater total constrained profit than would have been possible in the absence of second markets.

A noteworthy implication is that the firm operating in oligopolistic second markets may have an advantage over competing firms. The regulated firm can "afford" to take (long-run) losses in these second markets while competing firms cannot. Under these circumstances, it is conceivable that the firm could drive out lower-cost producers—the loss it willingly takes in second markets could exceed the difference between its costs and the lower costs of other firms. It may succeed, therefore, in either driving lower cost firms out of these markets or of discouraging their entry into them. This is unlike the textbook case of "predatory price-cutting" where the regulated monopolist may temporarily cut prices in outside competitive markets to drive out rivals and subsequently raise prices to monopoly levels. The monopolist would ordinarily engage in such a practice only if he had the expectation that in the long run he would make a positive profit in these additional markets; but here even in the case of a long-run loss the regulated firm may find operations in such markets to be advantageous as long as the firm is permitted to include its capital input in these markets in its rate base.

Moving to a mathematical treatment, let us consider an extreme example where operating in a second market permits the firm to act as an unconstrained monopoly in the first market, i.e., operating in the second market permits satisfaction of the regulatory constraint such that the firm can operate in the first market at output OA in Figure 2. We shall assume that for any combination of factors along the socially optimal expansion path in market 2 the firm is just able to break even in that market. That is, for any equilibrium x_{12} , x_{22}

$$(12) \quad p_2 z_2 - r_1 x_{12} - r_2 x_{22} = 0.$$

The constraint for n markets is written:

$$(13) \quad \sum_{i=1}^n p_i z_i - s_1 \sum_{i=1}^n x_{1i} - r_2 \sum_{i=1}^n x_{2i} \leq 0.$$

Denoting output and factor inputs in market 1 as \bar{z}_1 and \bar{x}_{11} , \bar{x}_{21} respectively at the output at which profit is unconditionally maximized

in market 1, we have

$$(14) \quad p_1 \bar{x}_1 - s_1 \bar{x}_{11} - r_2 \bar{x}_{21} = m, \quad m > 0$$

where m is the value of "excess" profit in market 1 that would violate the constraint (13) if the firm operated only in market 1. However, by moving along its expansion path in market 2 the firm can choose a level of capital input such that

$$(15) \quad p_2 \bar{x}_2 - s_1 \bar{x}_{12} - r_2 \bar{x}_{22} = -m.$$

Adding (14) and (15) we see that the firm can now satisfy constraint (13) without foregoing any profit in market 1. While the unregulated firm would be indifferent about operating in market 2, the regulated firm in this example finds market 2 attractive because it can add capital to the rate base at "no loss"; i.e., for any capital input in market 2 the output generates revenues just equal to factor cost. Since in market 2 the actual cost of capital is below the allowed rate of return, the firm can apply the difference in satisfying the constraint in market 1 and thereby enjoy additional profit equal to $s_1 - r_1$ for each unit of capital in market 2.

This analysis suggests that even if the firm suffers a loss in market 2 (measured in terms of social costs r_1 and r_2) it may still operate there provided the value of x_{12} ($s_1 - r_1$) exceeds this level of loss. If it suffers a loss it would no longer operate in market 1 at the profit-maximizing output OA in Figure 1; seeking to equate the marginal value product of capital in both markets, it would move toward OB .

In the literature on public utility economics, concern is frequently expressed that the firm will attempt to inflate its rate base to increase its profit. However, the problem is generally viewed as one of proper valuation of rate base, i.e., the firm would always have an incentive to have its property stated at a value higher than its cost. The problem has given rise to a great deal of controversy about proper valuation, especially concerning original versus reproduction cost, and depreciation policy.⁵ In the present study the problem of rate-base inflation is not viewed as one of valuation but rather as one of *acquisition*—quite apart from the problem of placing a valuation upon the rate base, the firm has an incentive to acquire additional capital if the allowable rate of return exceeds the cost of capital.

III. *The Telephone and Telegraph Industry*

Turning to the domestic telephone and telegraph industry, we find that the market structure and the regulatory setting are consistent with

⁵ For examples of the manner in which the problems has previously been treated see [5, Ch. 19, 20] [10, Ch. 12, 17] [14, pp. 515-16].

those described in the model. And the implications drawn from the model, concerning relative factor inputs and incentives to operate in some markets even at a loss, raise issues relevant to assessing market behavior of firms in the industry.

For our purposes, the notable feature of the industry's market structure is that the degree of competition does vary from one subsector to another. Common carriers have monopoly positions with regard to public message telephone and telegraph services, while they compete with each other in supplying private line services to customers who, in addition, are free to construct private wire facilities for their own use as an alternative to purchasing from the common carriers.

The principal supplier of public message telephone service is the Bell Telephone System. Besides the parent corporation, American Telephone and Telegraph Company, the Bell system includes 22 subsidiary "associated" companies of which 20 are primarily or wholly owned by AT&T. Each of the associated carriers provides local exchange and toll service within the state or group of (contiguous) states that comprises its "operating territory."⁶ The Bell system holds about 98 per cent of all facilities employed in long-distance message toll telephone service in the United States, and about 85 per cent of all facilities employed in local telephone service. The remaining 15 per cent of local exchange facilities are in the hands of about 3,200 "independent" telephone firms, most of which are very small. These carriers connect with the Bell system, under service- and revenue-sharing agreements, and provide an integrated nationwide network. Competition does not exist among firms in the public message telephone business. Although many firms are in the industry, each has its own exclusive local marketing area.⁷

In the telegraph field, in contrast to telephone, public message telegraph service is offered only by the Western Union Telegraph Company. This is a much smaller subsector in terms of revenues than public message telephone service. In 1959 Western Union revenues for the former were about \$170 million, while Bell and independent connecting carrier revenues for the latter were \$7 billion.

Bell and Western Union compete in common markets in providing other services. Until recently Bell (together with independent connecting carriers) was sole supplier of private-line telephone service. How-

⁶ AT&T, through its Long Lines Department, provides interstate line and radio facilities to connect the separate operating territories of the associated companies; in addition, in some cases Long Lines participates in providing interstate service internally within the territories of the multistate associated companies.

⁷ A good description of the industry and its present-day market structure is contained in [8, pp. 4-34].

ever, in 1961 Bell and Western Union negotiated facilities contracts⁸ that enable Western Union to offer private-line telephone service in competition with Bell. Western Union and Bell both provide telegraph exchange service and private-line telegraph service—Bell's teletypewriter or TWX service is similar to Western Union's Telex, and Bell's teletype private-wire service is similar to Western Union's leased circuit teleprinter offering. In addition, a new competitive element has recently been introduced: as an alternative to purchasing private-line telephone and telegraph services from the common carriers, firms outside the communications industry may now operate their own microwave facilities to provide communication among their geographically separated plants.⁹

Intrastate services of the common carriers are regulated by individual state regulatory commissions; interstate operations are regulated by the Federal Communications Commission. These agencies use a "fair rate of return" criterion in regulating prices within their respective jurisdictions. The services of each common carrier are generally lumped together in computing the rate of return to be regulated. For example, in regulating Bell's service the FCC routinely considers together all revenues, plant investment, and operating costs of Bell's interstate services in computing a rate of return to serve as the basis for decisions about price adjustments.¹⁰ Likewise, most state agencies compute an over-all rate of return for each carrier for all of its intrastate operations within the state in question.

Since the interesting implications of the model rest on the assumption that the allowable rate of return exceeds the actual cost of capital, the question arises as to whether revenues of the industry do exceed factor costs. While it is impossible to treat this question exhaustively here, there is some reason to believe that revenues are generally in excess of costs. We have been told by representatives in both the industry and in regulatory agencies that justification exists for allowing a return in excess of cost to give firms an incentive to develop and adopt cost-saving techniques. If the firm is left only indifferent as among a wide range of activities it has no positive incentive to mini-

⁸ These contracts permit Western Union to lease Bell communications facilities in order to enter markets that it could not feasibly serve if confined to its own facilities.

⁹ While railroads and public utilities, the so called "right-of-way" companies, have historically been permitted by law to employ privately owned radio communications facilities for their internal needs, it was not until 1960 that the way was cleared (by a final decision of the Federal Communications Commission in Docket 11866) for other firms to provide their own communications facilities.

¹⁰ It is true that special studies of the separate services are occasionally made by the FCC in order to determine individual rates of return. Evidence from one such study will be presented below.

mize costs for any given activity. Consequently, regulatory agencies do not typically view with disfavor rates of return which are (within broad limits) somewhat in excess of rates they would judge to reflect cost. Positive profit is sometimes generated by the "regulatory lag" phenomenon: As the firm adopts new cost-saving technology or as its business volume rises for output subject to decreasing costs, its rate of return rises. However, the regulatory agency does not react immediately to force prices down. Rather, a lag of years may be involved. An example of this can be drawn from the interstate telephone operations of the Bell System. In its over-all interstate operations Bell experienced a decline in its rate of return from 7.5 per cent to 5.2 per cent from 1950 to 1953. Reasoning that a rate in the neighborhood of 5 per cent was too low, it filed revised tariff schedules increasing interstate message toll rates by about 8 per cent—an increase expected to bring the rate of return up to about 6.5 per cent. The FCC, agreeing that earnings under the old tariff were inadequate, allowed the new tariff to go into effect. There is a strong implication in the FCC staff memoranda written at the time that a fair rate of return was considered to be in the neighborhood of 6 per cent.¹¹ After the increase went into effect in 1953, the rate of return rose to 6.6 per cent in 1954, 7.7 per cent in 1955, reached a peak of 8.5 per cent in early 1956, and continued in excess of 7 per cent during 1957 and 1958. Despite an interstate toll rate reduction in 1959, the rate of return amounted to almost 8 per cent in 1959 and 1960. The fact that the rate of return remained above a 6 per cent level during most of the decade meant that for a number of years revenues in interstate operations exceeded the FCC Staff estimate of cost.¹²

One implication drawn from the model is that the firm increases its ratio of capital input to cooperating factor input in a manner that increases social costs at the equilibrium output. Do the common carriers in this industry overinvest in this fashion? Unfortunately, empirical evidence is not available to us on the issue of bias in favor of investment

¹¹ A clear, concise account of the manner in which the FCC regulates interstate telephone and telegraph services is contained in [12, pp. 3427-45].

¹² The rise in Bell's rate of return is partly attributable to Bell's striking success in developing and adopting new cost-saving technology. The average book cost per circuit mile of Long Lines plant declined from roughly \$230 in 1925 to \$30 in 1960. The strong long-run incentives apparent in Bell's activities to cut costs may be construed as *prima-facie* evidence that it enjoys positive profits. Of course, one could argue that another factor is present—entrepreneurship—whose cost would more or less offset the positive profit; i.e., in the economic sense (in contrast to the accounting sense) revenue may just cover cost and the firm still has incentive to minimize cost. But here we are concerned with the *marginal* cost of capital to the firm compared to the *marginal* return to capital allowed by the regulatory agency. If the latter exceeds the former, the "regulatory bias" emerges regardless of whether total cost includes a fixed charge attributable to an additional factor.

in plant and equipment. However, one point should be made: the regulatory agencies exert little direct control over investment decisions that would force the firm to follow the socially optimal expansion path. The FCC, for example, follows a "used and useful" criterion in judging whether a given item is to be included in the rate base of plant and equipment. If the item is being employed in operations, and if it is useful (judged partially on subjective grounds), it is included. While common carriers are required routinely to provide a formidable list of reports concerning current operations, the relatively small staffs of the regulatory agencies available for research and investigative tasks, the lack of satisfactory criteria upon which to make judgments, and the heterogeneity of both factor inputs and service outputs would make extremely difficult if not impossible the task of detecting such bias.

The second implication drawn from the model is that due to the nature of regulation the firm has an incentive to operate in some markets even at a loss. Again, there is no clear-cut evidence which shows whether common carriers in this industry do, in fact, operate at a loss in some markets. However, evidence is available disclosing that (1) fears of "unfair" competition based on operations at "noncompensating" prices play a prominent role as a source of conflict between the carriers themselves and between the carriers and the FCC; and (2) in attempting to establish a commercial communications satellite system, the federal government has enacted a law containing provisions that (to serve "public ends") appear to exploit the willingness of common carriers to operate in markets at a loss. We shall now discuss some of this evidence.

The FCC undertook a study in 1956 of interstate private-line services offered by the common carriers in order to determine the relationship between price and cost for these services on a more precise basis than is possible by considering only the over-all rate of return for each carrier on all its interstate services. In the course of the study Bell submitted data (based on 1955 operations) showing that its telephone grade services were earning at a rate of 11.7 per cent, and its teletypewriter (telegraph) grade services at 2.6 per cent.¹³ On the basis of this evidence, the FCC ordered interim price reductions in telephone grade services (in which Bell at the time was sole supplier) and permitted an increase for both Bell and Western Union for telegraph services (in which the two carriers do compete). The FCC expected the price adjustments to reduce substantially the spread between Bell's rates of return on telephone and telegraph grade services and to increase Western Union's rate of return on telegraph services.

¹³ The initial decision of the FCC staff in this study (not adopted by the Commission at this writing) is contained in [6].

During the study Western Union criticized Bell's behavior that allegedly resulted in Bell's relatively low rate of return on the telegraph services competitive with Western Union's own offerings. In the words of the FCC staff [6, p. 54]:

Western Union refers to evidence of record indicating that during the twenty-year period preceding this investigation, all principal private line telegraph rate adjustments were initiated by AT&T and, with one exception, all were rate reductions. Western Union alleges that AT&T has received a noncompensatory return on its private line telegraph service while enjoying a substantial return from services not competitive with Western Union. . . . According to Western Union, it follows that AT&T has engaged in unfair competition by maintaining unreasonably low rates for a competitive service and shifting the resulting financial burden to other services.¹⁴

Western Union's allegations, if true, would indicate that in conformity with the model, Bell is operating in private-line telegraph at a loss. However, it is impossible, for two reasons, to determine from the evidence in the FCC study whether this is in fact the case. First, the evidence in the record is simply not sufficient to determine what earnings level is "proper", i.e., what earnings level would just cover the cost of capital.¹⁵ Second, the rates of return quoted above are based on "fully allocated cost" as opposed to marginal cost. In our model, the firm operates at a loss in a market only if the additional revenues it receives by operating in that market are below the additional costs it incurs. And whether operations in that market impose a "financial burden" (to use Western Union's words) on the other services depends on whether additional revenues do cover the additional costs.¹⁶ But fully allocated costs are something else again. These include the costs of facilities used solely for the service in question and, in addition, they include an allocation of the "common" costs incurred by the carrier. For example, the telephone instrument itself is necessary in providing both intrastate and interstate message toll service as well as local exchange service; a transcontinental microwave system carries both public message toll and private-line traffic. In computing a rate of return for each of these services, it is necessary to allocate the costs of facilities having multiple uses. In general, the FCC allocates these costs in accordance with relative time of use. If a given facility is employed by service A 50 per

¹⁴ For AT&T's reply see [4, pp. 14-18].

¹⁵ The FCC staff concluded that AT&T's proper earnings levels is $7\frac{1}{4}$ per cent and for Western Union 9 per cent. This conclusion was contested by Bell in its reply brief: "These [FCC staff] findings are made despite the fact that there is not a word of testimony in the record concerning the over-all costs of capital to either carrier, much less the costs of capital for their private line services" [4, p. 3]. See also [2, p. 27].

¹⁶ A good statement of this point is contained in [1, pp. 7-10].

cent of the time and by service B 50 per cent of the time, the cost of the facility is split equally between A and B. For our purposes, however, the crucial question is whether the cost of the facility could have been cut in half if either service A or service B had not been offered.¹⁷ Is allocation on the basis of relative time in use an accurate reflection of marginal costs generated by each service? We may presume an affirmative answer only if the industry is subject to constant costs. However, the available evidence is not sufficient to determine whether the industry is, in general, subject to constant costs in the relevant range of output. If, on the contrary, it is subject either to decreasing or to increasing costs, use of the conventional cost allocation procedures would tend either to overstate or to understate marginal costs for particular services. Because of these possibilities, the rates of return commonly quoted for a particular communications service cannot be used as a reliable guide in determining whether a loss, in the relevant sense, is being incurred in providing that service and whether a financial burden is thereby being imposed upon the other services.

Competition between Bell and Western Union will probably continue to be a lively issue in future FCC investigations. In February 1962, the FCC was reported to have had "under consideration for some time an over-all study of telephone vs. telegraph competition"; in the same month the American Communications Association (a union representing Western Union employees) "formally petitioned for an investigation into the extent and effect of participation by the American Telephone and Telegraph Co. in domestic and international telegraph communications."¹⁸

Our model suggests that apprehension about the nature of competition in the industry is justified since a common carrier, regulated as described above, would (under certain conditions) have an incentive to operate at a loss in competitive markets and to shift the financial burden to its other services. In this sense, it would have an "unfair" advantage over other firms which do not have other markets sufficiently profitable to bear the loss of competing with it.¹⁹ Unfortunately, however, the FCC and other regulatory bodies are so wedded to the fully allocated cost criteria rather than to marginal cost criteria in judging the "fairness" of competition, that evidence drawn from future hearings and investigations will probably not throw much light on the question

¹⁷ For purposes of this simple illustration, we are assuming a zero elasticity of demand substitution between A and B.

¹⁸ [9, February 26, 1962, p. 1].

¹⁹ That is, the unconditionally maximized profits of the other regulated firms may be sufficiently low so that imposition of the regulatory constraint does not induce them to operate at a loss in competitive markets.

whether common carriers in some markets do, in fact, operate at a loss measured in the relevant economic sense.

Finally, the model appears useful in treating economic implications of the Communications Satellite Act passed by Congress in August 1962, after long and bitter debate [13]. The Act specifies establishment of a new, private corporation regulated as a separate entity by the FCC to develop and operate the satellite system. The corporation is to be financed in two ways: (1) It may issue capital stock, carrying voting rights and eligible for dividends, to be sold "in a manner to encourage the widest distribution to the American public [13, Sec. 304 (a)]. Purchase of this stock is also permitted by "authorized" communications common carriers²⁰ subject to the constraint that the aggregate of shares held by these carriers together not exceed 50 per cent of the total shares issued and outstanding. This stock is *not* eligible for inclusion in the carrier's rate base. For convenience in subsequent analysis we shall refer to these securities as "type I securities." (2) The Corporation may issue "nonvoting securities, bonds, debentures and other certificates of indebtedness as it may determine." Communications common carriers are permitted to hold these securities without specified limit, and these securities *are* eligible for inclusion in the rate base of the carrier "to the extent allowed by the Commission [FCC]" [13, Sec. 304 (b)]. For convenience we shall refer to these as "type II securities."

The model suggests that, given the provisions of the Act, communications common carriers would have a special incentive to invest in type II securities, and that their financial support might constitute a partial subsidy for the satellite corporation. By holding type II securities the common carrier incurs an interest cost (r_1) and collects whatever interest or dividends are forthcoming on type II securities (r_1'). Were the carrier unregulated or were the securities not eligible for inclusion in its rate base it would purchase securities only under the condition that $r_1' \geq r_1$. Since, however, the investment in type II securities can be included in the over-all rate base of the carrier, the carrier has an incentive (again under certain conditions) to invest more than would otherwise be the case.

Consider the example where the carrier receives a zero return on its investment in type II securities, i.e., $r_1' = 0$ at all levels of investment; therefore, the carrier suffers a loss of r_1 for each dollar of investment. If, however, the allowable rate of return (s_1) is greater than the interest cost (r_1) the regulatory constraint on the carrier's other services is relaxed, permitting prices and profits to be raised in the other

²⁰ Authorized common carriers presumably would include AT&T, Western Union and eight U.S. overseas radio and cable telegraph companies.

sectors. For each dollar in type II securities, the carrier's over-all profit would *rise* by the value $(s_1 - r_1)$: The loss involved in the investment in type II securities would be more than offset by the increased profits elsewhere resulting from inflation of the rate base and relaxation of the regulatory constraint. The carrier, then, may have an incentive to hold type II securities even if a direct loss is involved.

Two closely related implications arise from this analysis: First, the costs to the satellite corporation of obtaining money capital will fall if it can sell type II securities to common carriers at a return that is below their own interest cost (and if their own rate of interest is no higher than that which the satellite corporation would otherwise have to pay). To the extent that these funds provided at reduced cost to the satellite corporation permit a shift downward in its cost curves, the communications toll rates it charges to users of satellite services would also fall below the level that would have been established had the satellite corporation been forced to resort to conventional financing.²¹

Interestingly, a reduction in satellite communications toll rates by reducing financing costs to the satellite corporation, shifting the burden to other services, was intended by the sponsors of the bill that led to the Satellite Act. Senator Kerr, when introducing the bill to the Senate in February 1962, stated [11, p. 1670]:

[This bill strives for] . . . a privately owned corporation in which the existing American companies engaged in the international communications business would be able to invest, with their investments treated the same as the acquisition of new equipment and thus includable in their rate bases. This important feature permitting the rate of return for all communication services to be spread over a broad base would insure lower charges for communication satellite services.

Second, inclusion of type II securities in the carrier's rate base may permit the satellite corporation to operate even if its total revenues do not cover total market costs. In this case type I securities issues may be small, since little if any dividends would be earned, and the bulk of financial support might come from common carriers holding type II securities at a return below the market rate of interest.²² Again, the losses in satellite operations would be covered by revenues from telephone and telegraph services provided by the carriers.

²¹ These users include both U.S. and foreign international common carriers who would employ the satellite relays primarily for transoceanic communications links in combination with or as a substitute for submarine cable and radio. To the extent that users of the satellite system are the same carriers which invest in type II securities, their subsidy to the satellite corporation would be more or less offset by the reduction in toll rates they pay to the satellite corporation. However the Act specifies no particular relationship between the amount of type II securities they respectively hold and their relative use of the satellite system.

²² In this case type I securities would be attractive primarily because of the voting rights they confer.

IV. *Conclusions*

The preceding analysis discloses that a misallocation of economic resources may result from the use by regulatory agencies of the rate-of-return constraint for price control. The firm has an incentive to substitute between factors in an uneconomic fashion that is difficult for the regulatory agency to detect. Moreover, if a large element of common costs exists for the firm's outputs in the various markets, the widely used "fully allocated" cost basis for rate-of-return computation is likely to prove unsatisfactory in determining whether the firm is operating at a loss in any given market, or whether its activities in some markets tend to restrict competition in an undesirable manner. At the same time, regulatory practices that provide an incentive for the firm to operate in some markets even at a loss may constitute a convenient mechanism through which certain activities of the firm judged to be in the "public interest" can be subsidized.

Our analysis suggests lines of further inquiry: We have considered only the telephone and telegraph industry, but the issues raised by the model may be relevant to evaluating market behavior in other industries as well. It is notable that Gardner Means in a recent study [7] has advocated that certain large nonregulated firms judged to be "collective enterprises" be encouraged, by tax incentive, to engage in "target pricing" where they aim for a profit equal to a fair rate of return on investment. By following this approach to pricing, which is similar to that employed in public utilities, the danger exists (which he does not recognize) that these firms would be exposed to the same pressures discussed above of inflating their rate bases by substituting capital for labor and by expanding into unprofitable new lines in order to satisfy the authorities that they were using "proper" target pricing. It might prove worthwhile to examine the effect of target pricing in steel and other industries discussed by Means in the light of the preceding analysis. Furthermore, it might be interesting to explore alternative forms of government control that, by avoiding the return-on-investment criterion for price regulation, do not generate the bias disclosed here.

REFERENCES

1. American Telephone and Telegraph Co., *Brief of Bell System Respondents in Support of Lawfulness of Revised Telpak Tariff under Section 202(a) of the Communications Act*, regarding FCC Docket No. 14251. 1961.
2. ———, *Exceptions of Bell System Companies to the Initial Decision Released July 14, 1961*, regarding FCC Docket Nos. 11645, 11646, 12194. 1961.
3. ———, *Proposed Findings and Conclusions of the Bell System Companies*, regarding FCC Docket Nos. 11645, 11646. 1960.

4. ———, *Reply Brief of the Bell System Companies*, regarding FCC Docket Nos. 11645, 11646, 12194. 1961.
5. J. M. Clark, *Social Control of Business*, 2nd ed. New York 1939.
6. Federal Communications Commission, *Initial Decision* (adopted July 6, 1961), regarding Docket Nos. 11645, 11646, 12194. 1961.
7. G. C. Means, *Pricing Power and the Public Interest*. New York 1962.
8. National Association of Railroad and Utilities Commissioners, *Message Toll Telephone Rates and Disparities*. Washington 1951.
9. *Telecommunications Reports* (Washington), weekly news service covering telephone, telegraph and radio communications.
10. Emery Troxel, *Economics of Public Utilities*, New York 1947.
11. U.S. Congress, *Congressional Record* (Senate), Feb. 7, 1962, 87th Cong., 2nd sess. Washington 1962.
12. ———, *Consent Decree Program of the Department of Justice*. Hearings before the Anti-Trust Subcommittee of the House Committee on the Judiciary, 85th Cong., 2nd sess. Washington 1958. Pt. 2, American Telephone and Telegraph Co. (3 vols.).
13. U. S. Public Law 87-624, Communications Satellite Act of 1962, 87th Cong. Aug. 31, 1962.
14. Clair Wilcox, *Public Policies toward Business*. Chicago 1955.

COMPETITION AS A DYNAMIC PROCESS

A Review Article

By MYRON W. WATKINS*

Professor Clark's new study¹ confirms his reputation for keen observation, subtle analysis and rare detachment. Nevertheless it is a disappointing book. For measured against the author's bold aims, the results are minuscule. The stated objectives of the inquiry are: (1) to synthesize neoclassical economic theory and the Chamberlin-Robinson monopoloidal doctrines derived mainly from the fewness of sellers in specific markets and the practice of product differentiation; and (2) to provide, or at least to point the direction in which the outlook is favorable for developing, some new "dynamic tools of economic analysis" (preface, pp. ix, x).

In pursuit of the first objective, the inquiry is analogous to the age-old dialogue between Platonists and Aristotelians. As usual, the attempted reconciliation of opposites goes forward here through exploration of the feasibility of a "middle way" involving accommodation from both extremes. In effect, for Clark this process consists mainly of underlining the monopolistic tendencies that neoclassical theorists often ignored and of heavily discounting the monopolistic tendencies inherent in a situation where sellers are few and products are differentiated. The upshot is a persistent emphasis on the beneficent role of big business as it has developed willy-nilly and as it currently operates. Of course, a "synthesis" of opposites (in this case, of competition and monopoly) thus effected is illusory. It represents no solution of the problem, but simply a denial of its existence.²

* The author has recently retired from professional practice as business consultant. He wishes to acknowledge helpful criticism of an earlier draft from F. H. Knight and A. E. Kahn.

¹ J. M. Clark, *Competition As a Dynamic Process*. Washington: Brookings Institution, 1961. Pp. xvii, 501. \$7.50.

² For this reason the quest of syntheses to resolve fundamental antitheses is perennial. The method may succeed in "dissipating," or at least in rendering *hors de combat*, one or both of the opposite theses but it leaves a gap, still, between them. In philosophy, as in all the sciences, this issue will not down. Some men are convinced that "truth" lies only in generalizations, principles, laws, ideas or "ideals"; others are no less firmly, one might say congenitally, committed to the view that truth can be found only in particulars, data, specifics. The recurrent controversy on this issue among historians has recently been probed and brilliantly illuminated by a signally erudite scholar in the George Macauley Trevelyan Lectures at Cambridge University, winter 1961. See Edward Hallett Carr, *What is History?* (New York 1962). His perspicacious analysis in Chapters 5 and 6 should be particularly meaningful for economists in their present theoretical dilemma.

On the second objective, the failure to reach any clearly defined results may be traceable in part to the author's nebulous method of exposition. Presumably he was looking for supplements to various conceptions of demand functions and cost behavior that would lead to formal rules, perhaps even measuring devices, for computing the "allowances and adjustments" that should be made in taking account, mainly, of "changes over time" in conditions (on both sides of the market).

The reviewer is not aware how the frequently repeated charge can be substantiated that neoclassicists, for all their "static" premises, ignored changes in "conditions" either environmental or internal. They did premise competition; and is not the essence of competition uninhibited initiative in introducing and meeting technological changes, style changes, *et cetera*, in short, experimentation? Did any reputable neoclassicist assume absolutely unchanging technological or market "conditions"? Did they not all believe in and advocate "progress," at least, all of them after, say, the 19th century, when events had rolled back iron laws and Malthusian clouds into limbo?

The reviewer ventures the view that the author's difficulty in identifying and specifying new "dynamic tools of economic analysis" stemmed partly from the *ad hoc* nature of his own ventures into making "allowances and adjustments" for "changes over time." These excursions generally turn out to represent alibis, excuses, or extenuations of what would otherwise pass as predatory arrangements; or, less frequently, vice versa as explanations of the bad effects of maneuvers that, on their face, appear innocent, if not indeed beneficent. The situations or practices conceived to merit *special* treatment in the interests of the common welfare are distinctive features or structural patterns of particular firms, industries, or groups. For all practical purposes they are unique. The "adjustments" indicated are correspondingly special. They are hardly amenable to being subsumed under logical categories or types. (See Ch. 17.)

Another point to be stressed is that in all of these "special" cases the ultimate criterion of whether a practice or a situation warrants some "adjustment," whether positive or negative, in market regulation is departure from what "would be" the outcome of competition, not a *lutte à l'outrance*, but competition in some ideal sense. It is competition "vigorous enough to result in prices no higher than a *normal* competitive level for the industry" (p. 53; and see Ch. 6, 7; emphasis supplied). Such "vigorous enough" competition is repeatedly referred to as "a healthy kind and degree of competition," or some such equivalent as "yielding normal profits." Of course, the former phrase, which appears to be one of the author's favorite expressions, is egregiously ambiguous. Yet he can hardly be criticized for the use of such a nebulous concept. To have been more precise would have been to expose himself, we feel certain, to far more biting criticism. Nevertheless, if this concept is to be taken as a "dynamic tool of economic analysis," does it not need sharpening?

Quite broadly, the system of the "maverick" John Maurice Clark as set forth in the present volume corresponds closely to that of the "orthodox"

John Bates Clark.³ In both cases, the distinctive characteristic is the combination of a strong bias in favor of the fundamental postulate of free competition, a beneficent "principle," the continuing efficacy of which, "in the large," is in neither case subjected to critical examination, with a resolute determination to leave no stone unturned in attempting to reconcile with it the "stubborn facts." Compared with the elder Clark's exposition of the essentials of economic theory, the younger Clark's "system" as here propounded is predicated on a more relativistic awareness of the contemporary importance in market-adjustment processes of the factor of time, and of the incessant variation in environmental circumstances. The son's theory is plainly less rigid and mechanistic than the father's. But though more elastic, and in most respects more equivocal too, it would be a fair judgment, we believe, to say that its basic premises and major outline bear a close resemblance to that of John Bates Clark. This assessment is by no means derogatory.

In this connection it may be observed that the practical consequences of how the "competitive" order actually works in a "dynamic" world are in the *Essentials* all reserved for discussion in the last third of the book. Perhaps this accounts, in part, for the fact that the "dynamic" features of this neo-classicist's theory have been largely overlooked. John Bates Clark did not "worship a graven idol." He drew much of his theory, taking his work as a whole, from searching scrutiny of contemporary conditions. If he dwelt at times in an ivory tower, he used it as an observation post and his vision was not obscured by colored glasses. He had clear eyes. Significantly, he plainly anticipated (*Essentials*, p. 201) the major finding of a school of theory which became popular a quarter century later. "There is a question," he said, "whether, after competition has reduced the establishments in one sub-group [of industry] to a half dozen or less, they would not, even without forming a trust, act as a quasi-monopoly." From the context it is clear that the term competition is used here in its generic sense, embracing not only the emulative rivalry, which alone Clark approved, but also the predatory type aiming at liquidation of rivalry or extermination of rivals.

Granting that John Maurice Clark is a more vigorous, trenchant, and resourceful analyst of "competition in practice" than were most members of the neoclassical school, including his father, it can hardly be said that, in the present volume, he justifies his aspersions on the "equilibrium theorists," or his pretension of being a "trail blazer." For decades it has been customary among economists of all schools to make "allowances" for "conditioning factors" affecting market behavior, including alike sluggish response to competitive opportunities and overaggressive response to challenging "moves" by others. These "realistic" qualifications on the adequacy or even propriety of "competition in action" were intensified and highlighted, of course, by the

³ As expounded in *The Essentials of Economic Theory* (New York 1907). J. M. Clark is also careful to avoid trenchant criticism of Alfred Marshall's work. See e.g., Ch. 19, esp. pp. 475-76. Of the basic elements of "orthodoxy," as interpreted by Thorstein Veblen, only the hedonistic calculus is absent, at least outwardly, in the present study. See Veblen's analysis of "Professor Clark's Economics" in Thorstein Veblen, *The Place of Science in Modern Civilization and Other Essays*, New York 1919, pp. 180-230.

work of the so-called institutional school. That institutionalists did not call such attempts to reconcile theory and facts efforts to evolve "dynamic tools of economic analysis" does not make their so-called "descriptive analysis" any less significant. But it may help to explain the reader's inability to discover signal contributions to theory in Clark's enterprise in this direction. At any rate, the reviewer, with full awareness of the continuity of developments in economic theory, has the feeling that in this undertaking the author has added little to the profession's work-a-day equipment.

It is difficult to understand the organization of this study of how competition (or should one say pseudo-competition?) could be "saved"—saved alike from suicide and from socialism. The book is divided into 19 chapters. In the best textbook tradition, each chapter has a paragraph or two of prologue and of recapitulation at its terminal points. In addition, subdivisions averaging about seven per chapter identify by topic headings the major subjects discussed in each chapter. Nevertheless the reviewer found it hard to hold firmly in mind the main thread of the discourse. The study seemed to him, consequently, to lack cohesiveness.

Lest other readers experience a similar bafflement, he proposes a tentative alternative arrangement of the major divisions of the work. Conscious of the fact that the author's inquiry was avowedly exploratory, a probing venture, and that the suggested rearrangement of the textual outline may do an injustice to the author's intentions, the reviewer hopes that in any case his suggested alternative outline may assist prospective readers to proceed with a clear understanding of what to look for.

Chapters 1 through 7 comprise a useful introduction and reconnaissance. They survey the development of theories of how competition works, or should work, to adjust supply and demand, of the influence exerted on this adjustment process by costs of varying kinds and magnitudes, as well as of the sources of pressures and pulls exerted on demand. These chapters emphasize the significance of the emergence in this century of a radical but uneven change in the pace of technological advance and the accompanying alteration in the methods of production and distribution (marketing). All this is introductory to the formulation (in Chapter 8) of the problem with which the author's inquiry is mainly concerned: how to smooth the way to, and the way from, innovations.

The ensuing ten chapters (Chapters 9 through part of Chapter 18) comprise the main body of the study and might well be denominated Part II. Chapters 9 and 10 in this section might appropriately be entitled "The Relation of Product Differentiation to Market Structure and Pricing." Chapter 11 could be fairly described as "Market Structure and Pricing Under Product Homogeneity." Chapters 12, 13 and 14 are devoted to what the author calls "Competition at a Distance," which will be recognized as the root of the situation that gave rise to basing-point systems. Chapters 15-18 might usefully be combined, and for such a chapter one might borrow the title actually employed for Chapter 15, "Related Problems and Practices." This group includes a discussion of target pricing, of the influence on market structure and pricing of (a) big buyers, (b) special situations—integration, diversification, patents—,

and (c) unionism. Of course, the foregoing suggested revision of chapter headings and the arrangement of the study does not provide an exhaustive index of the full range of analysis in this section. For that matter neither does the author's table of contents. However, such a revision may serve to indicate more clearly the scope of discussion and help the reader to comprehend its bearing on what the author conceives as the most pressing contemporary economic problem: how to foster "economic progress," or more specifically, how to encourage innovations without diminishing over-all efficiency.

The third and final section (Part III here, consisting much of Chapter 18 and all of Chapter 19) might be designated "Conclusions." It does not consist of a summary of the argument and findings in the preceding ten chapters. Rather, the author's procedure in these pages is to inquire (in the light of the analysis in suggested Part II) into ways of attaining dynamic, healthy competition (a) by forestalling inflation, (b) by providing appropriate and dependable information, (c) by encouraging mobility, and (d) by coordinating the diversely rising rates of productivity in and among the several major branches of the economy, thereby smoothing its development.

From the title as well as from the author's prefatory announcement of the objective of his study, one might expect a clear definition of "effective competition." While Chapters 2 and 3 represent an endeavor to distinguish this concept from the sort of marketing process it was the object of the antitrust laws to foster and which the courts have consistently sought to preserve or restore, the discussion makes it clear that Clark's main preoccupation is to differentiate his concept from the theories of "imperfect" competition with their "monopoloidal" implications (pp. 50-52).⁴ Regarding the essentially semantic squabbling over the right term for designating a pattern of business organization intermediate between the conceptual extremes of perfect competition and monopoly, both of which concepts have been recognized all along as solely analytical devices without reality, there is no occasion here to challenge Clark's terminological choice.

But it is in devising a practicable alternative to these models that Clark lets the reader down. Certainly his shift of terminological allegiance from "workable" to "effective" competition in no way contributes to clarification of the central problem: how to distinguish from ineffective competition the real competition that theorists (including Clark, pp. 365-66, 486, *et passim*) invoke as a norm and that, in effect, the law enjoins.

The nearest approach to a definition of "effective competition" that the re-

⁴ Clark's animus to deflate the "monopolistic competition" theorists and thereby introduce some measure of support, excuse, or respectability for the "limited competition" he defends is indicated by the following passage (p. 51), among many others (e.g., Chapter 9, especially pp. 212-40): "On the normative side, the prevalent types of theorizing have one outstanding common characteristic. They tend to a finding that any feasible form of competition in industry and trade is defective in the same direction which monopoly is defective and to an extent that may be equivalent to the defects of monopoly, or less, or in some cases even more. . . . This is true . . . especially of the theories of E. H. Chamberlin. In relation to his theories, the present study could be regarded as an attempt to build a positive treatment on assumptions, many or most of which Chamberlin admits or leaves room for as exceptions or departures, but the significance of which he does not develop."

viewer encountered reads: "For . . . competition to be effective, the crucial thing seems to be that prices be independently made under conditions that give some competitors an incentive to aggressive action that others will have to meet whenever prices are materially above the minimum necessary supply prices at which the industry would supply the amounts demanded of the various grades and types of products it produces" (p. 18).⁵ This definition illustrates the author's tendency to shy away from an unequivocal statement. Nevertheless, for professional economists it is clear enough, though some might question whether the long qualifying clause beginning "under conditions" adds much besides verbiage. Do not the qualifications make for fuzziness of the conception of what is "crucial"? At least they leave unresolved the question of what objective tests can be applied to a pattern of market organization or of business behavior to determine its compatibility with the public interest or, more specifically, with "progress."

The feature of the current situation that sets the stage for a "reformulation of competitive theory" (p. 418) such as the author essays is that "competition tends to be overly strong in some sectors of the economy and insufficiently effective in others. . . ." (p. 486). *Inter alia* these differences in the strength of competitive forces often arise from, but more commonly and significantly lead to, disparities in the rate of technological advance, thereby impeding progress. Progress seems to be defined mainly in the form of increasing rates of "labor productivity" as the term is customarily employed (output per employee per time period). But it is reflected most clearly, it seems, in the rise of per capita real income in the community at large or perhaps even among wage-earners alone.

Disparities among firms and industries in the rate of progress give rise to the more insistent economic problems. In this category fall the socio-economic problems which Clark identifies by such catch-words as "inflation" (pp. 175, 272-80, 449-50, *et passim*), "sticky prices" (pp. 432-38), and perhaps also, in this category, "agriculture" (pp. 277-80, 302-4, *et passim*). Specific business practices also come in for analysis which is often, but not invariably, sketchy, though seldom superficial. However, the analysis of basing-point systems is neither sketchy nor superficial. It occupies no less than three chapters (pp. 299-362). In view of Clark's well-known preoccupation—and defiant lone wolf position—with respect to basing-point systems, no surprise need greet this concentration of all his resources and skill in the attempt to prove the economic defensibility, at least in such circumstances as those in the cement industry, of what he here calls "competition at a distance." The present writer will not review the controversy (ably and objectively summarized by the author). He would affirm only that this section is the clearest and most persuasive segment of the study, though he doubts whether it will change the views on this controversial subject of many members of the American Economic Association.

The discussion of sticky prices, spiraling wages, and inflation (pp. 432-59) is competent and incisive, judged by current standards in the analysis of fac-

⁵ See, also, p. 288 for a similar definition with comparable qualifications.

tor-sharing of the joint product, but hardly throws new light on price-level determinants. The analysis of advertising or sales promotion (pp. 84-85; 217-43) the reviewer found the least acute of any part of the study. It reflects the author's catholicity of outlook. It also illustrates well his bent toward taking account at least nominally of all factors conceivably involved in the adoption of a given practice, as well as of those in some degree or in some circumstances conditioning its results. This bent is in no sense to be denigrated per se. But unless it is kept in check with an extremely cautious regard for the relative importance of the several factors and contingencies it tends to lead, as here, to prolix exposition. It may account for the characteristic ambivalence and ambiguity in the author's comment on this burgeoning business practice. Speaking of the costs of selling efforts "necessary to familiarize the buyers with the new products and popularize them," Clark declares (pp. 84-85) that "if any considerable fraction of the effort so spent yields cumulative improvements in our level of living, this cumulative improvement outweighs *whatever fraction* of our resources we devote each year to bringing it about. We should like to reduce the waste and increase the serviceability. But most economic students would prefer an economy actively energizing its productive resources and progressing annually, with an amount of waste motion, to one with less waste motion and less employment of resources or slower economic progress. The former represents the direction in which institutions of market research and sales promotion are energetically steering the American economy."⁶ Manifestly, the stated trend has Clark's approval. But the reviewer wonders how the author discovered that "most economic students" agree with him.

Consider, also, the over-all vagueness of the following judgment (p. 53) on product differentiation ". . . it seems clear that product differentiation brings in an added dimension of competition, and . . . on balance . . . in the light of available remedies for accompanying defects, this outweighs any contrary effects it may have, especially in the light of progressive effects over time. In that light it appears that the kind of demand that goes with product differentiation is favorable rather than unfavorable to a healthy kind and degree of competition, unless the slope of the demand function is unduly steep . . . , or unless it brings advantages of size that unduly reduce numbers and restrict free entry. In these cases, product differentiation would afford a substantial shelter from competitive pressure. But in the more usual kinds of cases, it is quite consistent with competition vigorous enough to result in prices no higher than a normal competitive level for the industry. . . ." So? If we bear in mind the widespread adoption of this marketing device, a paraphrase of Jurgen's favorite response in argument may not be inappropriate here: "You may be right. Certainly I would not go so far as to say you are entirely wrong. Still, at the same time. . . ."

The general impression that a careful reading of this book gives is that Clark has scrutinized a broad area of the contemporary economic landscape and with his usual penetration uncovered significant new aspects of several

⁶ Emphasis added. Note the number of questions begged in this brief passage.

baffling problems. His discursive method enables him to offer solvents that under ideal conditions might well ameliorate the acute discord and distressing disarray that plague an economy experiencing a technological *bouleversement*. Nevertheless it appears to the reviewer that the study makes little advance toward its professed objectives. As indicated, the methodological synthesis proposed turns out to be only a deflation of a straw man, perfect competition, on one extremity and the erection of a dubious angel, enlightened competition, on the other. However, the reviewer salutes the survival in this generation of an eminent economist who is prepared to eschew, even to deride, the fashionable resort to rigid mathematical models.

COMMUNICATIONS

On the Theory of Expansion of the Firm¹

Economists who have spent time observing the operations of business enterprises come away impressed with the extent of management's occupation with growth. Expansion is a theme which (with some variations) is dinned into the ears of stockholders, is constantly reported in the financial pages and in the journals devoted to business affairs. Indeed, in talking to business executives one may easily come to believe that growth of the firm is the main preoccupation of top management. A stationary optimum would doubtless be abhorrent to the captains of industry, whose main concern is surely not at what size their enterprises should finally settle down (except where sheer size endangers their standing with the administrators of the antitrust laws) but rather, how rapidly to grow.²

Although the static theory of the firm is a helpful snapshot description of a system in motion,³ it is useful also to have an alternative construction of the kind which is described in this paper—another equilibrium analysis in which the *rate of growth* of output, rather than its *level*, is the variable whose value is determined by optimality considerations.

I. A Simple Growth Equilibrium Model

For simplicity the first model is confined to a case in which input and output prices are fixed (pure competition), and where the production function is linear and homogeneous. Thus I am either dealing only with the period of time before the firm grows so large that the prices become variables which are

¹ This paper owes much to the growing literature of the dynamics of the firm. Particularly, I am indebted to Robin Marris for permitting me to read his unpublished manuscript [5] and to Herbert Frazer who wrote his doctoral dissertation on the subject. Highly relevant and stimulating is Edith Penrose [7]. In addition I owe much to the work of Richard E. Quandt [8, esp. pp. 156-66]. I am also very grateful for their comments to A. Heertje, Fritz Machlup, Burton Malkiel, Richard Quandt, Harold Shapiro, and John Williamson. Finally, I must express my great appreciation to the National Science Foundation whose grant helped materially in the completion of this manuscript.

² This view is not unrelated to one of Kaldor's well-known arguments. See N. Kaldor [3]. Here the author reminded us that equilibrium of the competitive firm requires some sort of increasing costs to make it unprofitable for the company to expand indefinitely. But under pure competition there seems to be no obvious source of diminishing returns, and hence little reason for *any* scale of operations of the competitive firm to constitute a long-run stationary equilibrium situation.

³ Thus I am emphatically *not* proposing that the conventional theory of the firm be relegated to the garbage heap or the museum of curious antiquities. Static analysis of a nonstationary phenomenon can be immensely illuminating, and the received theory of the firm contains many very helpful results, both from the point of view of the understanding of the workings of the economy and the applied work of the operations researcher. It would be folly to deny ourselves the use of this body of analysis just because its domain of applicability is somewhat limited.

subject to the influence of the firm, or we must assume that all firms grow together and that in this process no one of them outgrows the others sufficiently to constitute it a significant force in the market. This premise permits me to evade the problem of demand for the expanding outputs of the firm. So long as it operates under conditions of pure competition its demand curves will be perfectly elastic and no marketing problems will affect its plans.⁴

It is assumed that management considers only a very simple growth pattern—a fixed percentage rate of growth, to be continued into the indefinite future. This heroic assumption is adopted to permit a simple characterization of the optimal growth path by means of a single variable, the permanent percentage rate of growth, g .⁵

Finally, it is assumed, at least for the moment, that the company's objective (which determines the optimal rate of growth of its output) is conventional profit maximization.

It is posited that costs can be divided into two categories: ordinary production and operating costs, and costs which arise only as a result of the expansion process. That is, any costs which would be associated with a given level of output if the output rate were not changing may be classed under output costs; any additional outlays above and beyond the output costs are called expansion costs. Output costs will only be taken into account implicitly, in the net revenue figures. That is, in discussing revenues, net revenue figures, from which output costs have already been deducted, will be employed.

Let R represent the initial net revenue of our firm, g be the rate of growth (which is to be determined), and i be the rate of interest relevant in discounting future revenues. Then, because of the constancy of the prices of all of the firm's inputs and outputs and the linear homogeneity of the production function, net revenues will grow precisely in the same proportion as inputs. Thus, in t periods, the firm's net revenue will be $R(1 + g)^t$, and the discounted present value of that net revenue will be $R[(1 + g)/(1 + i)]^t$. The present value of the expected stream of revenues will therefore be:

$$(1) \quad P = \sum_{t=0}^{\infty} R \left(\frac{1 + g}{1 + i} \right)^t = R \frac{1}{1 - \frac{1 + g}{1 + i}} = R \frac{1 + i}{i - g},$$

⁴ However, if all firms expand simultaneously in this way they may encounter secularly declining prices and problems of Keynesian excess supply. This macroeconomic problem is not discussed here since it merits being considered by itself in some considerable detail. I have elsewhere taken the optimistic position that if all firms expand rapidly enough they will usually create sufficient purchasing power to constitute a market for their products. No doubt many readers will question this hypothesis which appears to be a distant relative of the Say's Law family.

⁵ If this premise is not employed and the optimal rate of growth at every future moment of time is left to be determined, we are forced in to the morass of the theory of functionals and we cannot escape without at least some recourse to the calculus of variations.

provided only⁶ that $g < i$ so that $(1 + g)/(1 + i) < 1$ as is required for convergence of the geometric series (1).

It is perfectly obvious in this situation that we have

$$(2) \quad \frac{\partial P}{\partial g} > 0,$$

that is, the present value of the net revenue stream will grow indefinitely with the rate of expansion g . In fact, P will grow at an increasing rate with g , and its value will exceed any preassigned number as g approaches i , as shown in the net revenue curve, RR' in Figure 1. There is clearly nothing here to place a limit on the rate of expansion of the firm.

The firm will only be constrained from accelerating its activities without limit by its expansion costs, the present value of which we designate as $C(g)$. The literature is replete with discussions of the administrative costs of growth and there is no point in recapitulating these materials here. It is enough to point out that growth is what strains the firm's entrepreneurial resources and adds to the company's risks, and it may be expected that after some point the resulting increases in costs will catch up with the marginal revenues derived from more rapid expansion.⁷ That is, it may be assumed that the slope of the cost curve CC' , which is the graph of the function $C(g)$, will normally be less than that of RR' near the horizontal axis, but that eventually the slope of the former will catch up with and finally exceed that of the latter. (It may be, however, that in some cases the slope of the cost curve will ex-

⁶ The problems caused for such a model if the rate of growth exceeds the rate of interest are well known. Specifically, the geometric series (1) will then not converge and the present value of the firm's profit stream will no longer be finite. See, e.g., David Durand [2]. However, as Miller and Modigliani have shown, the case $g > i$ is not a serious possibility. They write [6, fn. 14]: "Although the case of (perpetual) growth rates greater than the discount factor is the much-discussed 'growth stock paradox' . . . it has no real economic significance. . . . This will be apparent when one recalls that the discount rate, . . . though treated as a constant in partial equilibrium (relative price) analysis of the kind presented here, is actually a variable from the standpoint of the system as a whole. That is, if the assumption of finite value for all shares did not hold, because for some shares g was (perpetually) greater than i , then i would necessarily rise until an over-all equilibrium in the capital markets had been restored." (The notation has been changed from the original to that employed in this paper.)

An alternative way of avoiding this problem is to drop the (unrealistic) premise that the horizon is infinite. However, a finite horizon (say one involving 5 periods) will yield an expression for total revenue which is somewhat more messy than (1). Though it will be a fifth-degree polynomial, it will have only positive coefficients and so any equilibrium will still be unique. Indeed, the results of the infinite horizon model all seem to continue to hold in the finite horizon case.

⁷ This view of the shape of the cost function can also be defended with the aid of the usual (somewhat shaky) appeal to the second-order maximum conditions. For, given the shape of our revenue function, the cost curve must behave in the manner shown in Figure 1 or there would be no profit-maximizing growth rate.

Note also that C is likely to be a function of other variables in addition to g , i.e., it is apt to depend on the initial absolute level of output—a small firm is likely to find it less costly to expand 10 per cent than does a large company. However, since $C(g)$ is the present value of all expected future costs taken together, initial cost differences may not play a very important role.

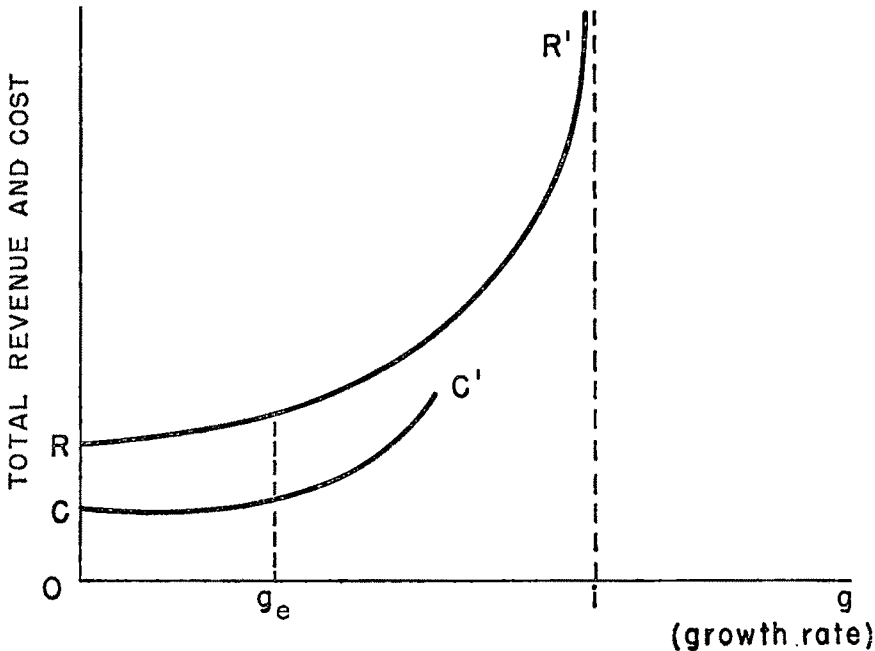


FIGURE 1

ceed that of the revenue curve throughout the positive quadrant so that the optimal growth rate will be zero negative.)

Specifically, we obtain the growth-profit function:

$$(3) \quad \Pi = P - C(g) = R \frac{1+i}{i-g} - C(g).$$

The profit-maximizing conditions are then (using the notation Π_g for $\partial\Pi/\partial g$, etc.),

$$(4) \quad \Pi_g = P_g - C'(g) = R \frac{1+i}{(i-g)^2} - C'(g) = 0,$$

(the first-order marginal revenue equals marginal cost condition), and

$$(5) \quad \Pi_{gg} = 2R \frac{1+i}{(i-g)^3} - C''(g) < 0,$$

the second-order condition.

Graphically, the equilibrium rate of growth is given by Og_e in Figure 1, the value of g at which the slope of the expansion cost curve CC' and that of RR' are equal.⁸

⁸We might even envision a long-run zero-profit competitive growth equilibrium in which entry has caused shifting of the curves and produced a zero-profit tangency position at which growth level has settled. There is some question in my mind whether, in a growth model such as this, much relevance can be ascribed to that type of long-run adjustment.

II. Comparative Statics in the Analysis of the Model

This simple growth model can easily be made to yield some results in terms of comparative statics. While some of these are not particularly surprising, they may offer some reassurance that the model does not possess particularly perverse properties, and that it can serve as an instrument of analysis much like the standard stationary equilibrium model.

First, a rise in the interest rate will reduce the present value of the stream of expected revenues, for we have⁹ by (1)

$$(6) \quad P_i = R \frac{(i - g) - (1 + i)}{(i - g)^2} = -R \frac{1 + g}{(i - g)^2} < 0.$$

Moreover, a rise in the interest rate will reduce the *marginal* revenue yield of increased economic growth, P_g , for we have, differentiating (6) partially with respect to g ,

$$(7) \quad P_{ig} = P_{gi} = -R \frac{(i - g)^2 + 2(i - g)(1 + g)}{(i - g)^4} < 0$$

by our basic assumption $g < i$.

It is now rather simple to prove that (at least in a perfect capital market where some market rate of interest determines the relevant discount factor) a rise in the interest rate will reduce the equilibrium rate of growth of the firm. For differentiating the first-order maximum condition (4) totally and setting $d\Pi_g = 0$ (so that the equilibrium condition continues to hold) we obtain:

$$d\Pi_g = P_{gi}di + \Pi_{gg}dg = 0$$

or

$$(8) \quad \frac{dg}{di} = -\frac{P_{gi}}{\Pi_{gg}} < 0$$

by (5) and (7).

Geometrically, this obvious result is a consequence of the fact that a rise in i reduces the slope of the RR' curve in Figure 1 throughout its length, as indicated by (7), so that the equilibrium growth level, Og_e , must move to the left.

A somewhat more interesting application arises out of the recent proposals

⁹A complication is introduced by the fact that interest payments are among the output costs which have been subtracted from our net revenue figure, R , so that R should no longer be treated as a constant when differentiating with respect to i . This can be taken care of by noting that our assumptions of linear homogeneity and constant price imply that the quantity of money capital employed by the firm should be strictly proportionate with $R(1 + g)^t$. Say it will equal $ikR(1 + g)^t$ and therefore incur an annual interest payment, $ikR(1 + g)^t$. In that case we need merely write $R = R^*(1 - ik)$ and make this substitution in our revenue function (1). It may then easily be verified by direct differentiation that the resulting expression for P_i will be slightly more complicated than (6) but that it will still be negative. A similar remark holds for (7) and (8).

to stimulate business growth by means of appropriate government subsidies.¹⁰ Suppose one is considering two alternative subsidy plans for this purpose. The first plan involves payments (S_{1t}) proportionate with the percentage rate of increase of the firm's output growth,

$$S_{1t} = s_1 g_t = s_1 g.$$

The present value of all such expected future subsidy payments is

$$(9) \quad S_1 = s_1 g \sum_{t=0}^{\infty} \left(\frac{1}{1+i} \right)^t = s_1 g \left(1 + \frac{1}{i} \right).$$

The alternative plan proposes to offer a stream of subsidies (S_{2t}) proportionate to the absolute rate of increase of output:

$$S_{2t} = s_2 [R(1+g)^t - R(1+g)^{t-1}] = s_2 g R(1+g)^{t-1}$$

whose capitalized present value is:

$$\begin{aligned} S_2 &= \frac{s_2 g R}{1+g} \sum_{t=1}^{\infty} \left(\frac{1+g}{1+i} \right)^t = \frac{s_2 g R}{1+g} \left[\left\{ \sum_{t=0}^{\infty} \left(\frac{1+g}{1+i} \right)^t \right\} - 1 \right] \\ &= \frac{s_2 g R}{1+g} \left[\frac{1+i}{i-g} - 1 \right] = \frac{s_2 g R}{1+g} \cdot \frac{1+g}{i-g} \end{aligned}$$

or

$$(10) \quad S_2 = \frac{s_2 g R}{i-g}.$$

Adding, in turn, the subsidy expressions (9) and (10) to our basic profit function (3) we obtain the two new profit expressions:

$$(11) \quad \Pi^* = R \frac{1+i}{i-g} - C(g) + s_1 g \left(1 + \frac{1}{i} \right)$$

and

$$(12) \quad \Pi^{**} = R \frac{1+i}{i-g} - C(g) + \frac{s_2 g R}{i-g}.$$

By the same procedure as was employed when the effect of an interest rate change was examined, we arrive at the respective comparative statics results:

$$(13) \quad \frac{dg}{ds_1} = - \frac{1 + 1/i}{\Pi_{gg}^*} > 0$$

and

$$(14) \quad \frac{dg}{ds_2} = - \frac{iR}{\Pi_{gg}^{**}(i-g)^2} > 0$$

¹⁰ For example, in the Kennedy administration 1961 investment credit proposals. See also Klaus Knorr and W. J. Baumol [4], whose suggestion seems, in substance, to have been adopted by the Canadian Government (House of Commons, *Proceedings*, Apr. 10, 1962, pp. 2706-7).

if the second-order conditions $\Pi_{gg}^* < 0$ and $\Pi_{gg}^{**} < 0$ both hold. Thus both types of subsidy would, indeed, stimulate the growth of the profit-maximizing firm.

We can go beyond this somewhat uninteresting conclusion by asking which of these two types of subsidy will yield more growth per dollar of government outlay. For this purpose we must deal not with s_1 and s_2 , the subsidy rates, but with the total subsidy outlays, S_1 and S_2 , as given by (9) and (10). From these we obtain:

$$(15) \quad \frac{ds_1}{dS_1} = \frac{1}{g(1 + 1/i)}$$

and

$$(16) \quad \frac{ds_2}{dS_2} = \frac{i - g}{Rg}.$$

Multiplying (13) by (15) and (14) by (16) and writing out the expressions for Π_{gg}^* and Π_{gg}^{**} we obtain:

$$(17) \quad \frac{dg}{dS_1} = - \frac{1}{g\Pi_{gg}^*} = - \frac{1}{g \left[2R \frac{1+i}{(i-g)^3} - C''(g) \right]}$$

and

$$(18) \quad \begin{aligned} \frac{dg}{dS_2} &= - \frac{i}{g(i-g)\Pi_{gg}^{**}} \\ &= - \frac{i}{g \left[2R \frac{1+i}{(i-g)^3} - C''(g) + \frac{2is_2R}{(i-g)^3} \right] (i-g)}. \end{aligned}$$

Hence subsidy S_2 will yield higher marginal returns than subsidy S_1 if and only if expression (18) exceeds expression (17), i.e., if and only if

$$- \frac{1}{g\Pi_{gg}^*} < - \frac{i}{g(i-g) \left[\Pi_{gg}^* + \frac{2is_2R}{(i-g)^3} \right]}.$$

This requires

$$(i-g) \left[\Pi_{gg}^* + \frac{2is_2R}{(i-g)^3} \right] > i\Pi_{gg}^*$$

or

$$-g\Pi_{gg}^* + (i-g) \frac{2is_2R}{(i-g)^3} > 0$$

and since (because $\Pi_{gg}^* < 0$ by the second-order condition) both terms in this last expression are positive, this requirement will always be satisfied. We conclude that in our model a subsidy of the second type will then always yield higher marginal growth returns than does a subsidy of the first type.

It is also noteworthy that a net investment tax credit of the sort originally proposed is essentially equivalent in our model to a growth subsidy proposal of type two. For the investment credit is a subsidy proportionate to the level of net investment. With our linear homogeneous production function, and with constant input prices, the capital-output ratio will be constant so that a subsidy proportionate to investment will automatically be proportionate to the absolute rate of increase in output.

Since so many other considerations must enter any decision among alternative growth stimulation methods there is no point in laboring this discussion further. The case serves, however, to illustrate how meaningful theorems can be derived from the growth equilibrium model of the firm.

III. *Profit versus Growth Maximization*

The discussion so far has been confined to the case of pure competition and has assumed that the firm's objective is to maximize profit. But larger *oligopolistic* firms may well have a different set of objectives.¹¹ Specifically, I have suggested that management's goal may well be to maximize "sales" (total revenue) subject to a profit constraint. Though I remain firmly convinced of the merit of the hypothesis as a static characterization of the current facts of oligopolistic business operation, in the present context—a growth equilibrium analysis—it is desirable to modify the hypothesis in two respects.

First, maximization of *rate of growth* of sales revenue seems a somewhat better approximation to the goals of many management groups in large firms than is maximization of the current *level* of sales. For example, most company publicity materials seem to emphasize the extent to which the firm has "progressed" rather than the sheer magnitude of its current operations. In my earlier static model I was forced to employ a sales-revenue-level objective as an approximation to a measure of the rate of growth of the firm's scale of operations. A growth equilibrium model now frees me from this necessity.

The second modification deals with the nature of the profit constraint, which in a static model may have seemed to be arbitrarily imposed from the outside—perhaps even a device to avoid explaining what had to be explained, very much like the fixed mark-up of doubtful origin which lies at the heart of the full-cost pricing discussions. A growth analysis enables me to give an explanation of the profit constraint which, I hope, is somewhat less superficial and rather more convincing.

From the point of view of a long-run growth (or sales) maximizer, profit no longer acts as a constraint. Rather, it is an instrumental variable—a means whereby management works towards its goals. Specifically, profits are a means for obtaining capital needed to finance expansion plans. Capital is raised both by direct retention of profits and by the payment of dividends

¹¹ See [1], esp. Ch. 6-8.

to induce outside investors to provide funds to the company. But, beyond some point, profits compete with sales. For the lower prices and higher marketing outlays which are necessary to promote sales also cut into net earnings. Hence, too high a level of profits will reduce the magnitude of the firm's current operations, while too low a profit level will prevent future growth. The optimal profit stream will be that intermediate stream which is consistent with the largest flow of output (or rate of growth of output) over the firm's lifetime.

Specifically, this optimal profit rate can be described with the aid of a simple model such as the following:¹²

Let

g represent our firm's growth rate,

I be its level of investment as a per cent of the value of current capital assets (the percentage rate of growth of the firm's money capital),

Π be the profit rate as a per cent of present equity¹³

D be the dividend as a per cent of present equity, and

E be the retained earnings as a per cent of present equity per unit of time.

The objective then is to maximize:

$$g = f(I, \Pi)$$

subject to¹⁴

$$I = \phi(\Pi, D) + E$$

$$\Pi \equiv D + E.$$

The first of these equations, the objective function, expresses the competitive relationship between growth and profit rates, and states that the rate of growth of the firm's operations varies (directly) with investment, and (after a point) inversely with the profit rate (as indicated in Figure 1). The next equation, however, shows that the profit rate indirectly assists growth by providing capital through retained earnings, and by attracting funds from outside sources at a rate, $\phi(\Pi, D)$, which depends both on the dividend rate and the company's profit rate. From this system we can then determine the optimal profit rate, Π , which from our long-run point of view enters into the

¹² For present purposes there is no need to take explicit account of such decision variables as prices, advertising outlay, etc.; but the model can easily be expanded to do so.

¹³ In practice, of course, different profit rates may be optimal at different points in the company's history. But in the fixed-price constant-returns-to-scale model which is employed here there is no reason to depart from a single optimal profit level.

¹⁴ Perhaps, in accord with the Miller-Modigliani view [6] that dividends do not matter, D should be omitted from the ϕ function. Other possible variables that have been suggested for inclusion as elements which significantly affect the willingness of the public to supply funds to the firm are $d\Pi/dt$ —the rate of growth of the firm's profit rate, and g , the rate of growth of its output.

It has been suggested that other, partly conventional, constraints are imposed by the capital market and should be incorporated in a more elaborate version of the model. These include restrictions on the debt-equity ratio, on the ratio between current assets and sales, and on the extent of reliance on noninternal financing.

constraints just as one of the variables in the system. Only in a static sales-maximization model, then, does profit appear as an independent datum arbitrarily given from the outside—a fixed minimal profit requirement which has somehow to be met by the firm.

Substantive theorems for a (sales) growth maximization model may be developed which contrast its consequences with those of profit maximization.¹⁵ However, these propositions are completely analogous with those which I have already developed elsewhere for the case of sales maximization. For example, the growth maximizer's sales, advertising outlay, and (trivially) his growth rate will be larger than those of the profit maximizer and the pricing and output decisions of only the former may be expected to vary in response to changes in fixed costs. Since the logic of these results in our present analysis is exactly the same as it was in the sales maximization model there is no point in repeating the argument here.

I will only suggest what appears to be the most important point, that our discussion has shown the standard apparatus of marginal analysis and mathematical programming to be fully applicable to decision problems even when management's objective is not the venerable profit maximization of economic theory.

WILLIAM J. BAUMOL*

REFERENCES

1. W. J. BAUMOL, *Business Behavior, Value and Growth*. New York 1959.
2. D. DURAND, "Growth Stocks and the Petersburg Paradox," *Jour. Finance*, Sept. 1957, 12, 348-63.
3. N. KALDOR, "The Equilibrium of the Firm," *Econ. Jour.*, Mar. 1934, 44, 60-76; reprinted in N. Kaldor, *Essays in Value and Distribution*. Glencoe 1961.
4. K. KNORR and W. J. BAUMOL (ed.), *What Price Economic Growth?* Englewood Cliffs 1961.
5. R. MARRIS, *The Micro Economics of Managerial Capitalism*. Unpublished manuscript.
6. M. H. MILLER and F. MODIGLIANI, "Dividend Policy, Growth, and the Valuation of Shares," *Jour. Bus.*, Oct. 1961, 34, 411-33.
7. EDITH PENROSE, *The Theory of the Growth of the Firm*. London 1959.
8. R. E. QUANDT, "Effects of the Tax-Subsidy Plan," Appendix B in K. Knorr and W. J. Baumol [4].

¹⁵ It is sometimes stated or implied that long-run growth and profit maximization must necessarily lead to identical decisions and results (see e.g., Penrose [7, p. 29]). But if, as in our model, it is sales rather than assets whose growth is being maximized, or if, even in the long run, investment in the firm can fall short of or exceed profit earnings, it is extremely easy to find counterexamples. In fact, only in the most unusual circumstances would sales (revenue) growth maximization be achieved by the maximization of profits.

* The author is professor of economics at Princeton University.

The End of the Golden Age in Solovia: A Further Fable for Growthmen Hoping to Be "One Up" on Oiko

Few accidents of timing could be more unfortunate than that which led to the publication of the first definitive account [2] of the discovery and attainment of the "golden age" in Solovia on the very eve of the outbreak of the savage and destructive civil war now being waged in that country. Nor could any course of events be more calculated to add to the bewilderment of those who had been tempted to hope that, at last, here was a piece of economic analysis which could be put into practice. Readers may be interested therefore in this first report of the causes of the revolt put together by the writer on information supplied by academic friends from the (now destroyed) National University of Solovia.

Great things have small beginnings and it appears in this case that all would have been well but for the intelligent curiosity of Alice, the nineteen-year-old granddaughter of Oiko, who, since her historic adventures into Wonderland, was well aware that things are often not quite what they seem. Alice's thinking developed along the following lines.

At first she accepted, like every properly indoctrinated Solovian of the post-Oiko era, that capital must be accumulated at the constant growth rate (g). This was at this time an article of faith not to be questioned. "But," she reasoned, "I do not really want to do my share of saving quite in this way. I am young. I should like to save hard now, to dissave heavily in middle life when the expenses of raising and educating a family are greatest, and perhaps to dissave slightly less heavily in retirement. Provided that *on the*

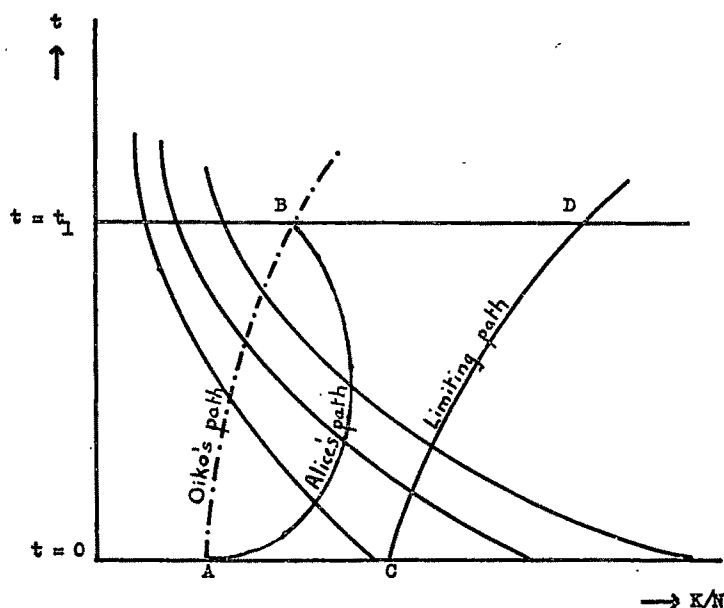


FIGURE 1

average over my life I have accumulated capital at the rate g , will this properly discharge my debt to society?"

As, by her plan, future generations of Solovian youth would inherit precisely the same amount of capital as if Oiko's rule had been strictly followed and since at no point of time would there be less capital in existence than under Oiko's rule, it seemed to Alice that no one could object. But she had become very cautious since her disconcerting encounter with Humpty Dumpty, so she drew a diagram (Figure 1) to confirm her impressions.

Along one axis she measured time (t) and along the other capital per head (K/N). Any point t_0 , $(K/N)_0$ is evidently associated with a certain level of output per head (Y/N) which would be produced at a time t_0 if at that time $(K/N)_0$ units of capital per head had been accumulated.

Alice quickly found that equiproduct contours, defining all points with the same output per head, take the general shape shown, given the Cobb-Douglas production function:

$$(Y/N) = (K/N)^{\alpha} e^{\rho t}$$

known to be appropriate to the Solovian economy. The value of (Y/N) evidently increases as the point t , (K/N) moves north-east.

The problem now is to discover the arc defining the optimal growth of K/N over time. Alice began by marking in the golden rule (Oiko's) path; that is, where K/N grows at the rate of $(g-\gamma)$, where γ is the population growth rate, and where the position of the path is such that at every moment of time, t_0 , the marginal product of capital remains constant and equal to g . To identify this she constructed a $t = t_0$ sectional map of her diagram (see Figure 2),

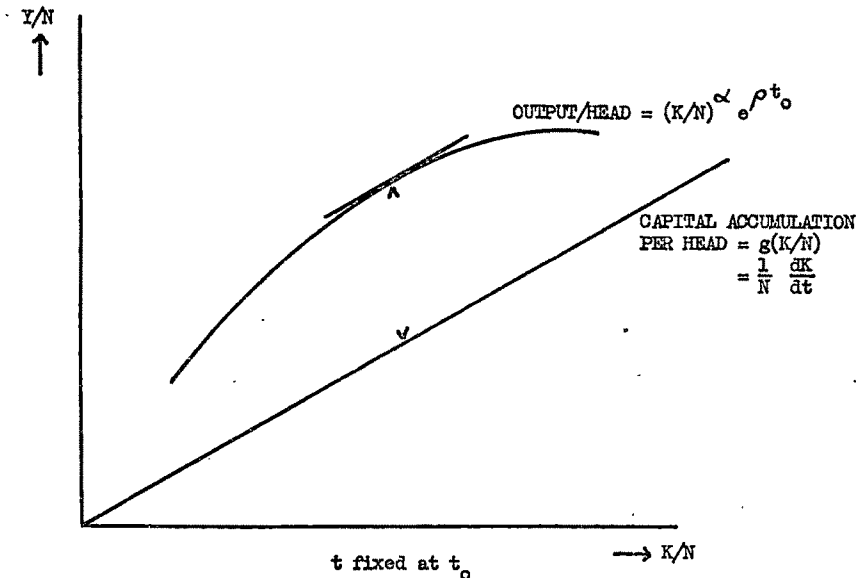


FIGURE 2

noting that consumption per head is maximized when the marginal product of capital (equals the interest rate?) equals the rate of growth g , and that in these circumstances saving per head $= gK/N =$ share of capital in the product per head according to Oiko's law.

Alice next estimated the number of people in the population of her own age whom she thought might share her views about personal saving and calculated the approximate path of accumulation if the government could be persuaded to let them have their way.¹ This was now marked on the diagram (Figure 1) and labeled Alice's path, $t = 0$ being taken to be the present and $t = t_1$ the date when the generation concerned could reasonably be expected to have ceased to take any active interest in Solovian affairs. The reader should note that this does not by any means imply that Alice's time horizon is any more finite than Oiko's. On the contrary her acceptance of the obligation to accumulate capital at the rate g on the average means that she recognized society's wish to accumulate at that rate forever.

Alice was now thoroughly puzzled. How could Oiko's path be optimal when it was evident (1) that at *every* point of time between 0 and t , her own path yielded greater total output per head; (2) that the total cost (in terms of consumption foregone) of following her own path would be precisely the same as the total cost of following Oiko's whilst in terms of utility her own path would cost less than Oiko's since she began by defining it as preferred; and (3) that generations living beyond time t_1 would clearly be unaffected by either choice.

Friends were consulted but, unfortunately, it proved difficult to persuade anyone to look at the diagram or listen to the reasoning. All this, it was said, has been solved by Oiko. How could Oiko possibly be wrong when here, in the market place, anyone could see the great statue erected in his honor?

Argument from authority is always impressive but Alice recalled how her grandfather, in his later years, would tell, with no more than a properly controlled trace of pride, how he had reached his "solution" long before the mathematicians despite their understanding of "extremals, functionals and Hamiltonians." Could it be that mathematicians did know something which Oiko did not? Alice took her puzzle to the university.

The professors were very kind. They looked at her diagram and congratulated her upon discovering so much. The younger members of the staff talked learnedly of "end points" and "singular arcs with corner points," and of Euler, Legendre, and Weierstrass necessary conditions. But an older professor explained more simply why Alice was partly right and partly wrong.

He readily agreed that the argument as set out by Alice was formally correct provided that her generation alone followed any path to the right of

¹ Alice was, of course, very well aware of the possibility that if *everyone* in every age group adopted her savings pattern, or something like it, a remote chance existed that the net effect of the changes would be zero and that accumulation might continue as under the Rule. This point is taken up later. The assumption that her generation alone were to follow her savings path, whilst everyone else followed the Rule, was introduced simply to demonstrate that the Rule does not after all maximize total consumption per head between times t_0 and t_1 .

AB. More would be produced at no extra cost so that everyone could be better off. But the implications of the discovery needed to be carefully stated.

Suppose that to exploit the possibilities now revealed the government sought to make the community as a whole follow some path like Alice's between *A* and *B* with the intention of maximizing total consumption of the representative consumer who is assumed to exist at every moment of time between 0 and t_1 . Suppose again that, to escape the accusation of shortsightedness in their policy (i.e., possession of a finite time horizon), the government further decreed that capital at time t_1 must be the same as it would have been under the Rule, can such a policy succeed? The answer, the professor explained, is yes up to a point. Certainly Oiko's path is *not* optimal in this sense although it purports to be.

Alice's argument seems to suggest that a path should be chosen between *A* and *B* as far to the right of Oiko's as possible, but this does not allow for the effect of the continuous growth of population at the rate γ . Increased production due to extra saving in the first few years might not be enough to compensate the representative man for his early effort when account is taken of the increased population in computing his share. On the other hand there does exist an optimal path which is not Oiko's and which can easily be found as follows.

We have to choose some arc between *A* and *B* (Figure 1) which maximizes the expression

$$\int_{t=0}^{t=t_1} \left[\left(\frac{K}{N} \right)^\alpha e^{\rho t} - \gamma \frac{K}{N} - \frac{d(K/N)}{dt} \right] dt,$$

that is, we have to maximize the sum, over the period, of output per head less the saving needed to maintain K/N at the existing level in the face of population growth, less the cost of accumulation per head, the net figure being total consumption of the representative individual. This looks like a problem in the calculus of variations but is in fact a rather special case.

Euler's necessary condition for a maximum [1, p. 529] if applied, requires

$$(1) \quad \alpha(K/N)^{\alpha-1} e^{\rho t} = \gamma$$

which gives K/N as a function of time t and is itself a unique path on Figure 1. In point of fact the path (1) does not pass through *A* and *B*. On the contrary it defines a constant-rate-of-growth path (of K/N) through *C* and *D*, which must lie to the right of Oiko's path as long as ρ is not zero. The application of Euler's condition tells us nothing in the first instance about an optimal path between *A* and *B*. What it does tell us however, is that if we chose end points *C* and *D* then any deviation from the path *CD* would *reduce* consumption. In particular the path *CABD* is a deviation from *CD* and would give less consumption per head than *CD*. That is, the path *CA + AB + BD* gives less consumption than *CD*;

$$\text{or } CA + AB + BD < CD$$

$$\text{and } AB < CD - CA - BD = AC + CD + DB.$$

Hence the path $ACDB$ from A to B gives greater consumption per head than Oiko's direct path AB . Indeed this argument holds for any arbitrary path from A to B as well as Oiko's path so that $ACDB$ is optimal.

Clearly the path CD marks a rightward limit to Alice's path beyond which consumption of the representative man would begin to diminish if the community as a whole were induced to follow it. That CD lies to the right of Oiko's path, AB , is clear from Figure 2, since AB is the path where the marginal product of capital is equal to g and CD is the path where the marginal product of capital is equal to γ . And Oiko's law itself shows g to be greater than γ provided ρ is not zero.

The professor now pointed out that if the rate of population growth were zero then Alice's argument would hold without modification; for with the Cobb-Douglas production function the marginal product of capital never reaches zero however much capital is accumulated. Any path from A to B lying to the right of Oiko's path would yield a greater consumption per head on the average. If population growth is not zero however Alice's path will certainly yield greater consumption per head only if it lies to the right of Oiko's path and does not cut CD . If it should cut CD it may or may not yield higher consumption per head on the average than Oiko's path. This simply reflects the fact that it is never profitable to accumulate capital per head beyond the point where its marginal product is less than the marginal cost, γ , of keeping it at that level.

In other words, if the intention is to maximize consumption per head on the average, without qualification, the path $ACDB$ should be followed. Capital should be accumulated at an infinite rate in the first unit of time until C is reached. It should then grow at the rate g to D . To reach B capital should then be decumulated at an infinite rate in the last moment of time before t_1 . This is, of course, no more than a modification of Alice's "common sense." If we are indifferent to changes in the timing of our consumption between the "end" points $t = 0$ and $t = t_1$, and if consumption can be increased by decumulation of capital, clearly it is better to hold as much capital as possible, provided it earns more than it costs, for as long as possible; for we thereby enjoy the fruits of its productive power.

Alice was about to ask why, if a "crash" program is appropriate to attain Oiko's path without any thought of its cost, do we not introduce a crash program to attain the path CD ? And above all, what is the meaning of Oiko's maximizing condition if his path between A and B is not optimal. But the professor went on to explain that Oiko's law was based upon the implied assumption that it is *impossible* to move from A to B *except* along the golden age path. The golden age path is optimal only in the sense that, beginning from any point on the K/N axis which might be attained by a crash program, we can define a possible path to a corresponding (unique) point on the line $t = t_1$ reached by growth at the constant rate $(g - \gamma)$;² and, of this infinity

² In the special case of the Cobb-Douglas production function it is possible to identify each of these paths by its unique (forever) savings ratio. The Rule then becomes a rule for determining the optimum savings ratio. In countries other than Solovia however, Cobb-

of paths, AB maximizes consumption per head on the average. Alice's path, and every other variable growth rate path, is excluded from consideration by the assumption of constant growth. Alice noted at once the answer to her unspoken question. Clearly by Oiko's law more consumption per head is enjoyed whilst moving from A to B than would be enjoyed whilst moving from C to D , but more still might be enjoyed by moving along her own path from A to B .

The professor continued, "If ρ were zero evidently (from Edmund Phelps' account of Oiko's law) the paths AB and CD would be coincident; for in this case g would be the same as γ . Technical change is a major villain of the piece. If we could be sure that technical change would cease at some finite time the two curves AB and CD would converge. In this case a *crash* program should be designed to take us to C , Oiko's law notwithstanding. This assumes of course that maximum consumption per head is the objective."

Alice now tried a somewhat different line. "I began," she said "without any thought of discovering how to increase consumption per head. I simply wished to change the timing of my capital accumulation. How does this now fit into the problem?"

The professor replied that in fact Alice had been making explicit the simple truth that what most people would like to do is to maximize, not consumption per head, but *utility* from consumption per head. Alice's statement of her wishes made it clear that, for her, utility depended on time as well as consumption per head. The choice of path between A and B is now quite clearly a problem in the calculus of variations. What Alice wished to do was to maximize:

$$(2) \quad \int_{t=0}^{t=t_1} \psi \left[\left(\left[\frac{K}{N} \right]^{\alpha} e^{\rho t} - \gamma \frac{K}{N} - \frac{d}{dt} \frac{K}{N} \right), t \right] dt$$

between the end points A and B , where ψ is a utility function depending on consumption (C) at time t , and t itself. This problem, he went on, was extensively studied by F. Ramsey many years before Oiko was born, so that much of Alice's problem could be understood at once. Only incidentally did it happen that Alice could choose a path which increased utility, ψ , not only on account of intertemporal changes of consumption, exploiting the variable t in ψ . But also more obviously on account of increased aggregate consumption itself. When the function Ψ is introduced it is often a question of balancing one of these factors against the other. No longer would the path $ACDB$

Douglas production functions might not be appropriate. Only with the very limited class of production functions of the form

$$Y = \Phi(K, [Ne^{\rho t}])$$

is it true that a constant (forever) saving rate leads to a constant capital-growth rate. If there really were powerful reasons why only constant growth rates of capital should be admissible the problem of choosing an optimal initial stock is elementary whatever the production function. To find an optimal constant (forever) savings ratio, however, is much more difficult in general.

be optimal even if it could be attained in practice. It could not even be said that the new compromise path must lie between AB and CD . Conceivably it could lie to the left of AB . Moreover the choice of path is immeasurably complicated by the fact that individual preferences differ. A great deal of Alice's hoped-for intertemporal consumption substitution could be attained by suitable borrowing and lending between individuals within the community. The required "net" accumulation of capital might be provided for by suitable government fiscal policy combined with earmarked loans to industry.

Alice was quick to seize upon this last point. "Let us suppose that this can be done; does the problem then reduce to one of maximizing the total consumption in the period of the 'representative' man? Such a policy would clearly give the greatest aggregate quantity of goods to be shared. How it is to be shared is then a subsidiary problem. Clearly the best *practicable* path from A to B is that which maximizes the rate of capital accumulation until the line CD is reached (i.e., by a crash program), and which then continues accumulation at the rate $(g - \gamma)$ until a point on CD is reached where no further saving at all would just carry the community back to B at time t_1 . People in their middle years experiencing their greater costs and who, accordingly, did not wish to join in the early heavy savings program might borrow from those younger, paying back their debts as their expenses grew less."

Alice concluded this argument rather lamely by conceding that the cost and inconvenience of borrowing and lending between individuals so as to fit individual plans to an arbitrary over-all pattern might well not be compensated for by the increased output attained.

The professor smiled sadly. "Even more important, why choose A and B as end points? What is the virtue of Oiko's crash program leading to A ? And what is the virtue of the point B ? Oiko's celebrated lemma, 'Each generation in a boundless golden age of natural growth will prefer the same investment ratio, which is to say the same natural growth path,' clearly depends again on the assumption that nothing is possible other than a constant rate of growth. For if we were now at C as a result of the activities of our forefathers we could perhaps reach B with no saving at all and hence with much greater consumption. Even if the present generation aimed at some level of capital per head at time t_1 , greater than D , future generations would bless us the more however much they believed in Oiko's rule. For the right to diminish the stock of capital is a right which increases consumption whatever views are held about the virtues of a golden age.

"Why in fact do we ever aim to raise the living standards of future generations at our own expense? Suppose we did not. Suppose that on the contrary we set out to keep consumption per head constant. Such a policy would yield an unambiguous path defined by the condition,

$$(3) \quad \left(\frac{K}{N}\right)^{\alpha} e^{\rho t} - \gamma \frac{K}{N} - \frac{d\left(\frac{K}{N}\right)}{dt} = \frac{C}{N}$$

where C/N is the constant consumption per head. This is a differential equation describing a one-parameter family of curves. The appropriate parameter is determined by the initial stock of capital. Such a time path might well involve a running down of capital stocks."

"Against this," objected Alice, who was beginning to understand, "many people feel they would like to give their children a 'better start in life' than they themselves enjoyed." The professor looked pleased. "Precisely! In the dark ages before Oiko each individual was permitted to choose his own savings path just as you wished to do. Presumably at that time choices were made so as to maximize a utility expression of the type (2). End points would have been chosen according to private feelings about what it is desirable to pass on to children. In some cases, of course, this may have been a secondary consideration, the main factor in the choice of end point being a desire for power or the control of productive assets for their own sakes. Unfortunately the individual could not foresee technical change, nor could he foresee the effect on his own income of his savings plan, but observation of the rate of profit might well have given some indication. Suppose, for example, each individual attempted to maximize the expression:

$$\int_{t=0}^{t=t_1} \psi \left[\left(rk + E - \frac{dk}{dt} \right), t \right] dt$$

where r is the profit rate, E is expected annual average earnings, and k is individual capital accumulation. Provided r and E remain independent of k and provided the rate of profit properly reflects the marginal product of capital we have a solution [1, p. 538] which is formally the same as that for aggregate problem.³

"Does this mean," asked Alice, "that the golden age of Solovia is not a golden age from the point of view of welfare? And if so why do professors at the university not seek to make this known? Ought we to go back to uncontrolled savings plans determined by each individual?"

³At this point the original manuscript included a paragraph suggesting that constant growth rates imply that the marginal utility (to the community) of consumption must grow over time also, despite the growth in consumption per head. I am grateful to Phelps for a comment which led me to discover a sign error in the argument on which this conclusion was based.

In fact negative time discounting, in the sense above, is certainly implied only for constant growth paths to the right of the path CD (Figure 1). To the left of CD negative time discounting may or may not be implied according to the strength of diminishing marginal utility (time constant).

Indeed if utility were measured simply by the logarithm of consumption per head, C , being completely independent of time, the application of the Euler condition for an optimum [1, p. 538] to an expression of type (2) gives:

$$\alpha(K/N)^{\alpha-1} e^{\rho t} - \gamma = \frac{1}{C} \frac{dC}{dt}$$

which is Oiko's path. The rate of growth of capital per head (see Figure 2) equals the rate of growth of consumption per head.

This is not the only possible utility function of course. Evidently others could be found with either negative or positive time discounting of marginal utility according as the partial elasticity, with respect to consumption, of the marginal-utility-of-consumption function is numerically greater or less than unity.

The professor again looked sad. "For reasons already given it is not necessarily true that an individual who chooses a savings plan to maximize his utility *ex ante* will in fact maximize it *ex post*. The profit rate is not independent of every individual savings plan. And even if it were so we cannot assume that it is 'best' for the community that every individual should maximize his utility as he sees it. There are many arguments for growth which the individual cannot consider *in vacuo*. For example, the fastest growing country may attain the greatest political and military power. We might even wish to raise output per head beyond the point where consumption per head is maximized solely to bring into existence an emergency stock of capital.

"Unfortunately there do not always exist answers, even in principle to every question which can be put. This is particularly true of questions which include the words 'optimum' or 'best.' What is best is often a matter of what we can all agree is best. Solovia believes that a constant growth rate is best. Therefore it is best and Oiko's rule defines the best of the best. Moreover, how is it possible to argue that Oiko's path is not optimal if it is impossible to identify some other path which is?"

"But," objected Alice, "this brings me back to where I began. If I accept Oiko's path as best then I can easily show that my path is better. You yourself have justified my end points. I will now argue for my path between them. Such a path must clearly leave everyone better off in any sense of the word."

"Argue for it by all means," said the professor, "but take care you do not thereby loose a jinni from the bottle which it will not be easy to recapture. Remember also that your argument depends upon the assumption that all paths are possible. Distinguished economists from at least one renowned university would almost certainly claim that output cannot be represented by the kind of production function which we believe is appropriate to Solovia, or indeed by any aggregate production function at all. Although we do not believe this to be true of Solovia, it has been suggested that certain factors of production can be used only in fixed proportions in such a way that only constant growth rates are possible without technological unemployment of men or machines."

The professor's final warnings proved to be prophetic. Alice felt a little cross and slightly cheated, her feelings being, she thought, rather like those she had experienced after her encounter in Wonderland with a certain caterpillar.⁴

In a search for spiritual consolation she approached her friend, Thor, a rising young politician whose golden voice was alleged to have caused teenagers to scream with delight. By the use of certain weapons by which the weaker sex have throughout the ages proved themselves to be the stronger sex, Alice contrived to get Thor to listen to her argument and to understand the central point. Indeed so successful was she in this that scarcely two weeks had passed before Thor reached the essential stage of believing that he had first thought of the whole thing himself.

⁴The conversation which took place on this occasion has been reported elsewhere.

Thor did not, of course, fully understand all of the professor's points. He was astute enough to recognize, however, that the simple claim that a new capital accumulation policy, attractive to his own generation, could increase consumption per head above that planned, would provide him with a powerful electoral platform. He quickly convinced a number of associates. A new party was formed which took the title "The Young Ones," adopting as a kind of slogan a popular song of that title.

At first the new party succeeded only in attracting a great deal of publicity without making much progress. They did however claim that they were supported in their arguments by the economists at the university. This claim alarmed the "capitalist" community who, since Oiko, had prevailed upon the government to exempt profits from taxation on the grounds that all profits were in any case invested whereas all wages were spent on consumption. It followed, they had argued, that all government consumption must come out of wages if the community were to save at Oiko's "ideal" rate.

Attacks were made in the press on the interference in public affairs of "intellectuals" out of touch with reality. At this point a group of professors made the mistake of attempting an objective assessment of the truth. This proved to be completely unintelligible to the majority except insofar as it appeared to give authoritative support to the anti-Oiko group. The Young Ones were soon submerged as a political force, their argument being taken up by the official opposition party who, objecting in fact to the exemption of profits from taxation, seized the opportunity to reject Oiko's rule on the ground that it had been "shown" to be wrong.

The situation rapidly deteriorated to the point where the civil war began which has led to so much destruction of the country's capital stock.

I. F. PEARCE*

REFERENCES

1. R. G. D. Allen, *Mathematical Analysis for Economists*. London 1938.
2. E. Phelps, "The Golden Rule of Accumulation: A Fable for Growthmen," *Am. Econ. Rev.*, Sept. 1961, 51, 638-43.

*The author is professor of economic theory at the University of Southampton.

The End of the Golden Age in Solovia: Comment

1. The first result in Pearce's paper is that the capital-stock path which maximizes cumulative per capita consumption in any finite interval of time is generally not the Golden Rule (*GR*) path.¹ Even if the economy begins and is constrained to end in *GR* equilibrium (end-points *A* and *B* in his Figure 1),

¹Along the *GR* path, capital and output grow at the same constant rate, while investment equals profits (under pure competition and constant returns to scale). Therefore, in *GR* equilibrium, the profit rate on capital and the growth rate of capital (output) are equal. See my original article (p. 641), or the Symposium on Production Functions and Economic Growth in the *Rev. Econ. Stud.*, June 1962, 29, 155-267, *passim*.

the maximizing path departs from the exponential *GR* path between the end points if (and only if) there is technical progress. Specifically, it is maximizing to accumulate capital faster at first—driving the profit rate down to the population growth rate as quickly as possible—and to decumulate the “excess” capital at the last possible moment—raising the profit rate back to equality with the natural growth rate.

There is clearly no contradiction between this result and the results presented in the Growth Fable. I analyzed exponential paths, Pearce analyzed deviations from them. Moreover, at the substantive level, Pearce’s result contains no implications for the desirability of the *GR* investment policy. Pearce’s *ACDB* path achieves greater consumption in the future (and on the average) only at the cost of less consumption in the present. The *GR* path is still “efficient”: no alternative path can offer more consumption than the *GR* path at any point in time without its offering less consumption at some other point in time. Therefore, Alice is mistaken to say of her path, which is qualitatively similar to Pearce’s path, that “[It] must clearly leave everyone better off in every sense of the word.” Alice’s path does not dominate the *GR* path, and so the choice between them is purely a matter of preference.

2. Pearce writes that Solovia’s *GR* policy required every individual to accumulate capital at the natural rate of growth. Alice preferred to save differently, and this fact appears as a *prima facie* argument against the desirability of the *GR* policy.

But the *GR* policy could be carried out through a government budgetary surplus (deficit), coupled with the purchase (sale) of public or private securities. This would make individuals free to save and bequeath whatever they desired in the fiscal-credit environment created by government.

3. No one who has read the Growth Fable could suspect me of earnest devotion to the Golden Rule. It would be silly to make exponential growth a constraint on policy. Even if we wished to choose only among exponential paths, nothing in my paper proves or suggests that the *GR* path is on some criterion the optimal path—in view of the immediate consumption cost of increasing the capital-output ratio to its *GR* level when the initially given ratio is below that level; or the immediate consumption gain of reducing the capital-output ratio below its *GR* level when the initial ratio is above or equal to the *GR* level.

Let us take for granted that we do not wish necessarily to grow exponentially. Should we forget Oiko, like a bad dream? Is Oikonomics an impractical subject? Does it say nothing about desirable growth, or undesirable growth?

The message of the Growth Fable is that under certain conditions investment policy can be too thrifty, boosting the associated time path of output by less than the associated path of saving—hence lowering the consumption path. One rigorous implication of my analysis is that any constant capital-output (constant profit rate) path which sustains the capital-output ratio at a level in excess of its *GR* value is dominated by a policy which gobbles up the “excess” capital immediately and subsequently maintains the capital-output ratio at its *GR* value. Therefore, any investment policy which at some stage

permanently fixes the capital-output ratio at a level exceeding the *GR* level is inefficient and cannot be optimal (since a policy to be optimal must be optimal at every stage).

An obvious generalization of this result suggests itself, although any proof of it would apparently have to go beyond the analysis in my paper: Any policy which causes the capital-output ratio permanently to exceed—always by some minimum finite amount—its *GR* level is inefficient and hence cannot be optimal. Pearce's *ACDB* path and Alice's path pass this first test for optimality because they are only temporary deviations from the *GR* path; the supra-*GR* capital is consumed in the end.

EDMUND S. PHELPS*

*The author is visiting associate professor of economics, Massachusetts Institute of Technology, on leave from Yale University.

The Elasticity of the Marginal Efficiency Function: Comment

In his very stimulating treatment of the properties of the marginal efficiency function, Lorie Tarshis examined the effects of riskiness on the elasticity of investment by employing a hyperbolic marginal efficiency function [3, pp. 969-77]. This of course provided him with a curve of constant elasticity and hence supplied a secure basis from which to develop his results. Thus he showed that, if the risk allowance is constant over all projects or if the allowances differ but are random with respect to expected yields, the function adjusted for risk is less elastic than the unadjusted one. Although these results support the usual claims that risk reduces elasticity, Tarshis pointed out that over a wide range of circumstances the introduction of the risk allowance would not necessarily transform an elastic unadjusted function into an inelastic one. He then considered the case where the risk allowance is a fixed proportion of the expected yields. Here the introduction of risk produces no effect on the elasticity—a result which clearly contradicts the effect usually attributed to risk.

Had Tarshis used the linear instead of the hyperbolic function as his special case he could have (1) handled each of the three conditions more simply, (2) reversed the elasticity effects for the first two cases and thus raised even greater scepticism about the effects of risk on elasticity, and (3) obtained a stronger result for his last condition. Whereas the use of the hyperbolic relationship conveniently provides a function with constant elasticity, the linear relationship makes use instead of the property of constant slope. This feature also gives rise to a function which, at successively higher levels of investment, shows decreasing elasticity. Whether either a function with decreasing elasticity or one with constant elasticity is a reasonable one is, of course, an empirical question. This is not an issue which we shall pursue here (other than to note that in at least one recent empirical study of the effect of the interest rate on investment, the authors explicitly express a preference for a linear function over a hyperbolic one [1, p. 85]). Rather,

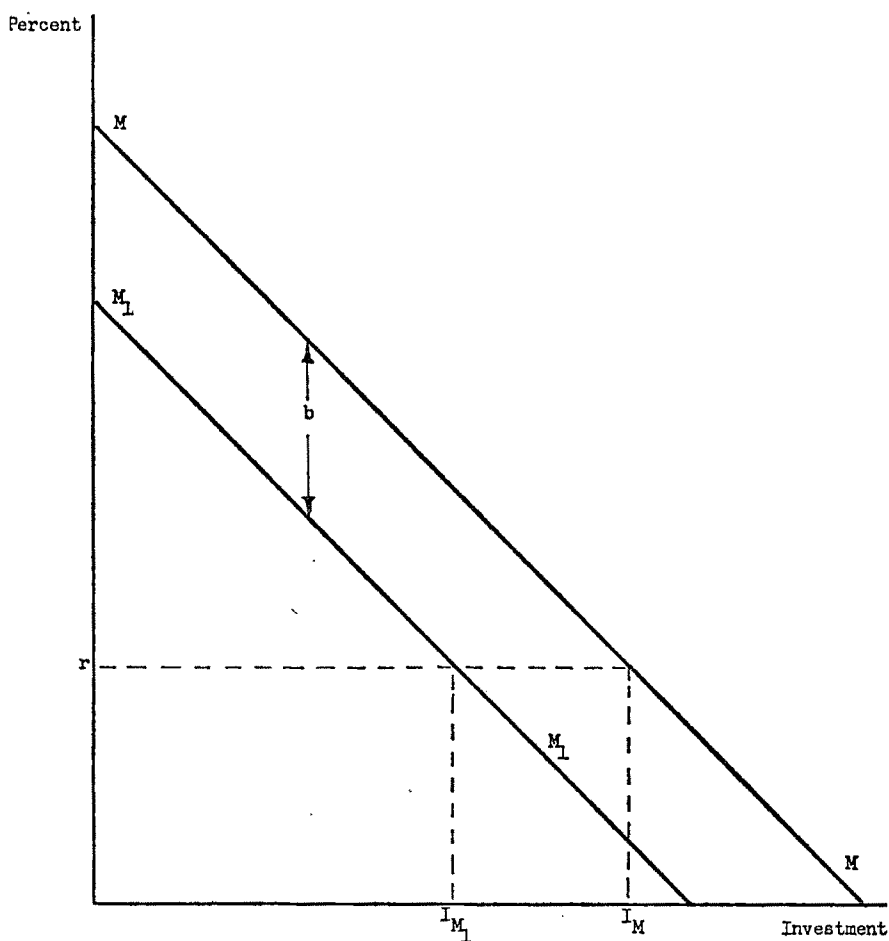


FIGURE 1

we shall simply provide the linear counterpart for each of the three cases Tarshis considered.

Case 1. The risk allowance is the same over all investments: Representing in Figure 1 the linear unadjusted marginal efficiency function by MM and the risk allowance by b percentage points, M_1M_1 becomes the adjusted function. Now the elasticity is given by:

$$\begin{aligned}
 e &= - \frac{dI}{dr} \cdot \frac{r}{I} \\
 &= - \frac{1}{s} \cdot \frac{r}{I}
 \end{aligned}$$

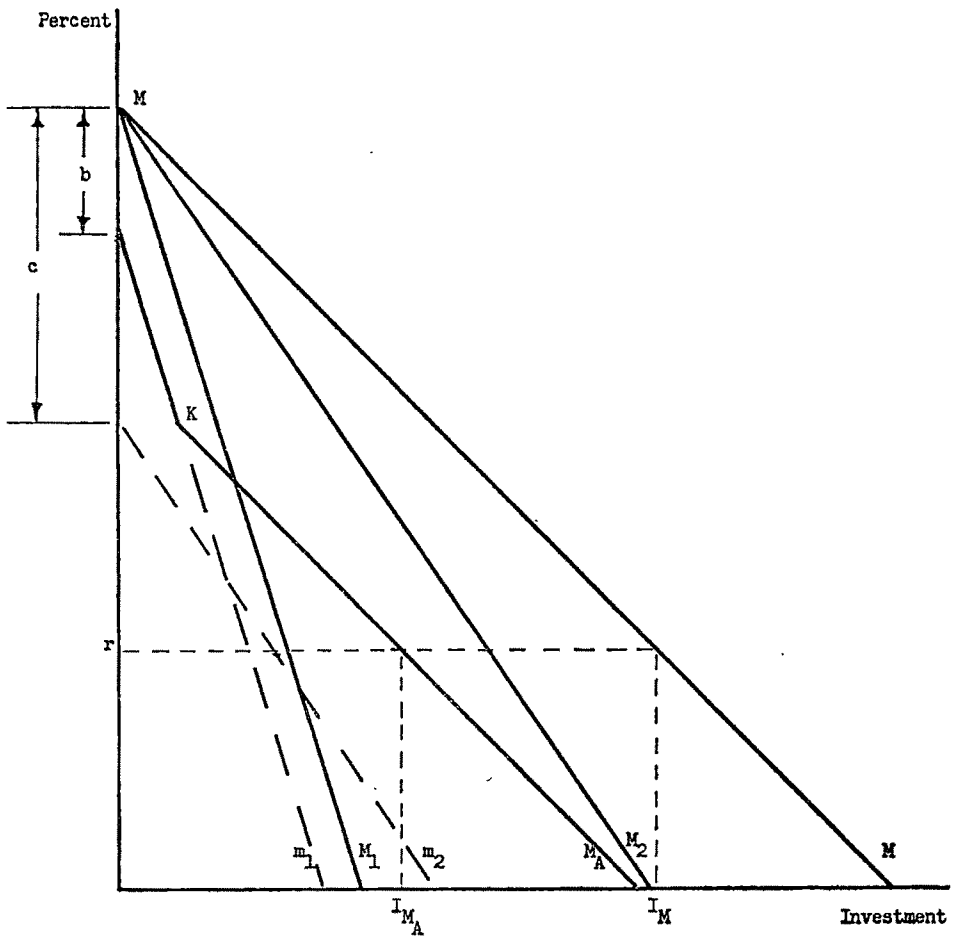


FIGURE 2

where s is the slope of the function at the relevant (I, r) at which the elasticity is being investigated; for a linear marginal efficiency function the slope is the same throughout. Since at every level of the interest rate I_{M_1} is less than I_M while the slopes of M_1M_1 and MM are identical, the elasticity of M_1M_1 exceeds that of MM ; the risk allowance everywhere *increases* the interest elasticity of investment.

Case 2. The risk allowance is different among projects but is independent of the unadjusted yields.

Following Tarshis, again let MM in Figure 2 represent the marginal efficiency function, unadjusted for risk allowances, and draw the functions M_1 and M_2 "so they lie A per cent and $(100-A)$ per cent respectively of the horizontal distance from the vertical axis and MM . Then M_1 is the marginal

efficiency function comprising projects on which a risk allowance of b is to be levied; M_2 is the corresponding function for projects on which the allowance is to be c " [3, p. 972]. Thus m_1 is drawn b percentage points below M_2 , m_2 is c percentage points below M_2 , and the horizontal sum of these two is given by M_A . Since at every level of the interest rate below the kink, K , the slopes of M_A and MM are the same whereas the corresponding amount of investment I_A is less than I_M , it follows that the elasticity of M_A exceeds that of MM . Below the kink, therefore, the effect of the risk allowance is again to *increase* the interest elasticity of investment.

Case 3. The risk allowance is proportional to the yield on the projects.

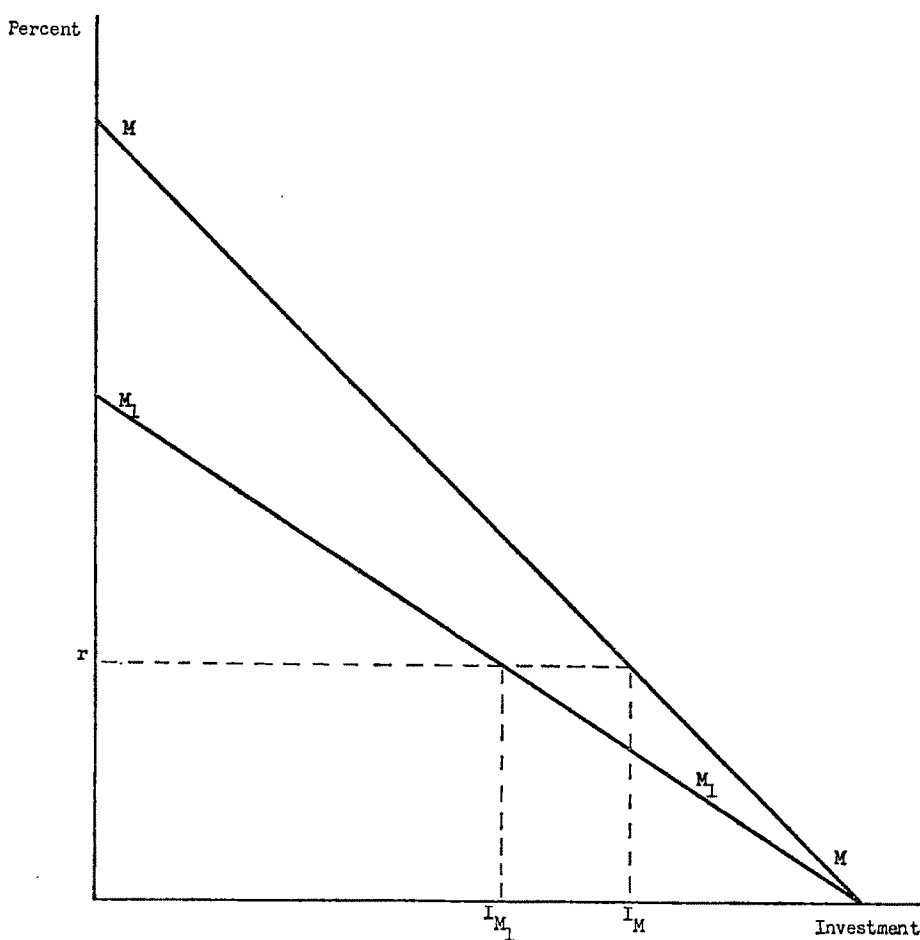


FIGURE 3

Here both the slopes of the functions and the magnitudes of the investments are so affected by the risk allowance that the latter results in an *increase* in elasticity at every interest rate.¹ That is, the absolute slope of M_1M_1 in Figure 3 is less than that of MM while at every level of the interest rate I_{M_1} is less than I_M . The increase in elasticity follows directly.

Combining the Tarshis function with our own we obtain the following nonlinear marginal efficiency expression:

$$I = \alpha_0 - \alpha_1 r + \alpha_2 r^{-\beta}$$

where each of the parameters is nonnegative. For $\alpha_0 = \alpha_1 = 0$ we have the Tarshis hyperbolic relation; for $\alpha_2 = 0$ we have our linear one. Assuming positive values for each parameter, the same three cases considered above provide results somewhere between those obtained by Tarshis and those developed by us. Thus for Cases 1 and 2 the introduction of a risk allowance may produce an adjusted function which is either more or less elastic than the unadjusted one. The outcome simply cannot be determined a priori. However, Case 3 provides us with a condition where the risk allowance unambiguously produces an adjusted function which is more elastic than the unadjusted one. In the absence of specific numerical estimates of the parameters, Cases 1 and 2 yield a mixed result while Case 3 is flatly contradictory to the usual view. Since this combined expression appears to be quite general indeed, it raises grave doubts concerning the standard arguments that the risk allowance necessarily transforms what might otherwise be an elastic function into an inelastic one.² Indeed it is entirely possible that the effect may go the other way.

OLIVER E. WILLIAMSON*

REFERENCES

1. E. C. Brown, R. M. Solow, A. Ando, and J. Kareken, "Lags in Fiscal and Monetary Policy" (Preliminary), staff paper prepared for The Commission on Money and Credit, 1961. (Mimeo.)
2. W. L. Smith, "Debt Management in the United States," Joint Economic Committee, Study Paper No. 19, *Study of Employment, Growth, and Price Levels*, Jan. 28, 1960.
3. L. Tarshis, "The Elasticity of the Marginal Efficiency Function," *Am. Econ. Rev.*, Dec. 1961, 51, 958-85.

¹ Tarshis anticipated this result in his remark that, "if the elasticity of the unadjusted function varied inversely with the level of investment, then the introduction of risk . . . would lead to an *increase* in elasticity at each interest rate" [3, p. 974].

² A recent example of such a standard argument is provided by [2, pp. 95-96].

*The author is a graduate student at Carnegie Institute of Technology. Lorie Tarshis' comments on an earlier draft of this note were appreciated, as were those of A. H. Meltzer.

The Elasticity of the Marginal Efficiency Function: Comment

In "The Elasticity of the Marginal Efficiency Function,"¹ Lorie Tarshis analyzes the widely-held view that investment projects involving long-lived capital are more responsive to changes in the interest rate than projects involving short-lived capital. He cites the supporting argument that "when projects are short-lived, . . . a change in the interest rate will . . . make little difference to costs" because "interest charges are relatively low" and "the ratio of depreciation allowances to interest is relatively high," while when projects are long-lived the opposite is true (p. 962). But, on the basis of four comparisons of hypothetical short-lived and long-lived projects, he concludes that "while these statements may be perfectly correct it is doubtful whether . . . they cast any light at all upon the elasticity of the marginal efficiency function."

The purposes of this comment are (1) to point out a defect in the method of analysis employed by Tarshis, (2) to present an analysis, free from that defect, which supports the view that the marginal efficiency function for longer-lived capital projects does have greater elasticity, and (3) to show that the factor affecting the elasticity of the marginal efficiency function may be described in more general terms as the capital-sales ratio rather than the length of life of the capital asset.

My criticism of Tarshis's method is, briefly, this: In three of his four hypothetical comparisons he has, in effect, drawn two identical marginal-efficiency-of-capital curves (that is, curves whose elasticities are the same by assumption), labeling one "Short-Lived Projects" and the other "Long-Lived Projects," and has then proceeded to demonstrate that the elasticity of the second marginal efficiency function is no higher than that of the first. This, surely, is an illegitimate procedure. Since the two functions have been made identical by hypothesis, it has been made impossible to reach any other conclusion. If equality of elasticities is to be *demonstrated*, it must not be *assumed*.

There is, it is true, a troublesome methodological problem which has to be faced, as Tarshis points out. In order to examine the relation between the length of life of projects and the elasticity of the function, "we must specify a model in which, while the length of life of the assets is made to vary, all other aspects of the projects are held constant" (p. 962). But if some "other aspects" are held constant, others must necessarily vary. Tarshis therefore makes four alternative assumptions about what is to be held constant (p. 962): (1) the "pattern of expected yields," or, the same thing, "the pattern of specific marginal efficiencies"; (2) the "pattern of expected 'increments' or Q 's," the Q 's in each case being the project's annual receipts gross of depreciation and interest but net of other costs; (3) the "pattern of Q 's adjusted for differences in depreciation allowances" so as to make "the patterns of the annual contributions to net profit . . . the same" (p. 966); and (4) the pattern of marginal efficiencies (as in No. 1), it now being assumed,

¹ This *Review*, Dec. 1961, 51, 958-85.

however, that there are "induced changes in the prices of capital goods" which can change the pattern.

Clearly No. 1 is an inadmissible assumption; it assumes away any possibility of difference in elasticities and thus prevents any meaningful inquiry into the effect of longevity on the marginal efficiency function. No. 3 turns out to be nothing more than a disguised form of No. 1; to assume that "the patterns of the annual contributions to net profit" are the same is equivalent to assuming that the patterns of marginal efficiencies are the same (see Table 4, p. 966).² Again, that which was to be demonstrated has been made true by assumption. No. 4 has the same basic defect; it restricts the inquiry to the question, "If the elasticities are alike for short-lived and long-lived projects when the prices of capital goods remain constant, will they continue to be alike if variations in investment demand cause capital goods prices to vary?" It, too, therefore, prevents the main question from being investigated. Only Assumption No. 2 is free from this methodological defect—and when that assumption is made Tarshis shows that "the elasticity of the marginal efficiency function will be higher when projects have a longer life" (p. 965).

Is Tarshis' second interpretation of the *ceteris paribus* assumption, then,

² This fact is somewhat obscured by Tarshis' use of the discounted-present-value formula to find the "annual increment" (*Q*) corresponding to any given yield for a project of stated life and stated supply price. By doing so, and by assuming straight-line depreciation (which is not in accord with the diminishing series of recoveries of capital obtained by the discounted-present-value formula), he obtains a pattern of "annual net profits" for his short-lived projects which differs very slightly from the pattern of yields from which it is derived. This can be seen from Table 1 (based on Tarshis' Tables 2 and 3).

TABLE 1—EXPECTED YIELDS AND PROFITS FROM SHORT-LIVED PROJECTS

Project	Annual Increments	Yield (Per Cent)	Index of Yields	Annual Depreciation	Annual Net Profit	Index of Net Profits
A ₁	\$224.63	4	100	\$200	\$24.63	100
B ₁	\$230.97	5	125	\$200	\$30.97	125.74
C ₁	\$237.40	6	150	\$200	\$37.40	151.85
D ₁	\$243.89	7	175	\$200	\$43.89	178.20

If the annual increments are computed instead by the method I have used later in this comment, not only does the arithmetic become simpler—the four annual increments become exactly \$224, \$230, \$236, and \$242—but the index of net profits becomes 100, 125, 150, and 175, coinciding exactly with the index of yields. This alternative method of computation seems to me conceptually more satisfactory; no longer does the puzzling situation exist in which the annual net profit on Project A₁, \$2.63, is 4 per cent of \$615.75 (which, by implication, must be the average amount of capital invested) while the annual net profit on Project D, \$43.89, is 7 per cent of \$627.00 (implying a higher average quantity of capital tied up although the initial investment is the same in both cases).

If Tarshis' Tables 3, 4, and 5 were revised to conform to my method of computing annual increments and annual net profits, it would become clear that what he has done is, in essence, to start with a 4:5:6:7 pattern of yields for short-lived projects, resulting in a 4:5:6:7 pattern of annual net profits. He has then adjusted the annual net profits of the long-lived projects in order to make their ratios 4:5:6:7. When the \$200 depreciation is added to each net profit of the long-lived projects, the resulting set of annual increments must necessarily represent yields of 4, 5, 6, and 7 per cent.

the correct interpretation? I think it is. To obtain a clearer view of this question, let us examine a slightly modified version of Tarshis' model.

Assume four short-lived projects (A_1, B_1, C_1, D_1), each requiring an initial investment of \$1000 and having a life of five years. Each project is to be financed with borrowed money, the loan being paid off in yearly installments. On the average, then, the size of the loan outstanding is \$600^a and the annual depreciation and interest charges are:

$$.2S + .6rS; \text{ or } \$200 + r(\$600)$$

where S represents the supply price of the project and r the interest rate (or, alternatively, the marginal efficiency when the expression above is equal to the project's annual Q). Assume, as Tarshis does, that these short-lived projects promise yields of 4, 5, 6, and 7 per cent respectively. Then their annual receipts (Q 's) are \$224, \$230, \$236, and \$242 respectively.

Assume also four long-lived projects (A_2, B_2, C_2, D_2), each having a life of ten years; assume that *when the interest rate on loans is 5 per cent*, each of the long-lived projects would have the same annual depreciation-and-interest costs as would each of the short-lived projects at that interest rate (namely \$230); and assume that each is expected to bring in the same stream of receipts as its corresponding short-term project—that is, \$224, \$230, \$236, and \$242 respectively.

On these assumptions, the depreciation-and-interest cost of each of the ten-year projects must be:

$$.1S + .55rS$$

and the supply price of each ten-year project must be \$1803.92. The marginal efficiencies of the eight projects must then be as shown in Table 2. It is seen that the elasticities are greater for the set of projects with ten-year lives.

TABLE 2—EXPECTED YIELDS FROM SHORT-LIVED AND LONG-LIVED PROJECTS

Short-Lived Projects				Long-Lived Projects			
Project	Annual Receipts	Annual Depreciation	Yield (Per Cent)	Project	Annual Receipts	Annual Depreciation	Yield (Per Cent)
A_1	\$224	\$200	4	A_2	\$224	\$180.39	4.4 ^a
B_1	\$230	\$200	5	B_2	\$230	\$180.39	5.0
C_1	\$236	\$200	6	C_2	\$236	\$180.39	5.6 ^a
D_1	\$242	\$200	7	D_2	\$242	\$180.39	6.2 ^a

^a Approximate figures.

The crucial question, of course, is: Are there solid grounds for assuming that the two patterns of annual receipts are the same? I think it can be shown that there are—if certain other assumptions are accepted as reasonable. First, let us think of the economy's array of projects, represented by the eight projects shown in Table 2, as investment possibilities in as many dif-

^a If an individual had five such projects in operation, begun in successive years, his debt capital would remain constant at \$3000.

ferent markets or industries, it being assumed that in each market or industry only the most profitable of the not-yet-undertaken projects is under consideration.⁴ Second, let us abstract from economies of scale and the indivisibility of durable capital assets, so that in any industry the yield of the marginal project not yet undertaken does not differ appreciably from the yield of the marginal capital already invested.⁵ And third, let us think of the economy in question as a competitive economy whose long-run equilibrium position would require a Wicksellian natural rate of interest of 5 per cent. If this economy were in long-run general equilibrium, all eight projects would be equally marginal and would have to produce annual receipts of \$230. The fact that some projects in Table 2 (when interpreted in this manner) have higher yields than others simply indicates that some industries offer more attractive investment opportunities than others and reveals a situation of long-run disequilibrium, caused by such things as recent changes in tastes, imperfect knowledge, and technological change. Any difference between a project's expected stream of receipts and its long-run equilibrium stream, \$230, must be due to the fact that productive capacity in the market that

* At first thought this may seem to be an unwarranted limitation; yet to assume otherwise would get us into a quagmire of difficulties. Consider the possible reasons why hypothetical projects in the same industry and geographical market might differ in prospective yield. (1) Two projects involving the sale of identical products may call for different methods of production—and therefore have different costs. But in this case the inferior project should not be in the array, for we should assume that investors act like economic men and, when a choice of production methods is possible, rule out any method which does not minimize costs. Moreover, if we were to admit into the array projects characterized by unnecessarily costly methods, the number of such projects would be limitless and the elasticity of the marginal efficiency functions for both short-lived and long-lived projects would become indefinitely large. (2) The products to be produced may differ in quality, resulting in differences in cost and/or revenue schedules which make one project less profitable than the other. But rational investors should refuse to consider a project which calls for the sale of a product of unnecessarily inferior or unattractive quality. And in this case also, meaningful analysis of the marginal efficiency function becomes impossible if we admit into the array the infinite number of conceivable projects in each industry made possible by continuous variation in quality. (3) Barring differences in production functions and in product quality, projects within the same industry and geographical market become economically indistinguishable and can be assigned different prospective yields only if they are interpreted to represent successive injections of new capital into the industry. This, of course, might be done. That is, we might suppose that Projects A and B are identical twins and Project B's yield is lower than Project A's only because it is calculated on the assumption that Project A has already become a reality. But this interpretation of the marginal efficiency function is inconsistent with the concept of the function as an aggregation of many individual projects which individual businessmen have in mind at some given time. Moreover, even if it were adopted, the conclusions reached in the argument that follows would be unaffected since the elasticity of the curves showing the yield of successive doses of homogeneous new investment in an industry depends on factors which are totally independent of the length of life of the durable capital required: namely, the elasticity of demand for the industry's product and also, in cases where subsequent investments entail higher costs because of the necessity of selecting poorer locations or making use of inferior or more costly labor and natural resources, on the elasticity of supply of labor and natural-resource inputs.

⁵ This assumption does not imply an unrealistic world in which one-room hotels are as efficient as large hotels; it merely implies that existing hotels may be expanded one room at a time—and will be if expansion on a larger scale would lower appreciably the marginal rate of return on capital in the hotel industry.

would be served by the project is out of line with current demand, causing the price in that market to differ from the long-run equilibrium price. Disequilibrium in each case must have been caused by a change in demand or a change in the cost schedule.

Is there any reason to expect the percentage deviations from long-run equilibrium price to be greater in the case of markets served by long-lived projects than in markets served by short-lived projects? They would be greater only if the disequilibrating shifts in demand or cost schedules that had caused them tended to be greater in the former markets. There would be no reason to expect changes in demand to be greater, since they stem from causes that are completely independent of conditions of supply. Nor would changes in labor costs, land costs, or costs of materials and services supplied by other firms be greater, since these too stem from causes that are unrelated to the length of life of the capital equipment. The only sort of change that could possibly be expected to cause the cost schedule to vary more widely in the case of long-lived projects is a change in the project's supply price (or the inverse, its quality). But even here the length of life of the project makes no difference. Suppose, for example, that the supply prices of B_1 and B_2 are reduced by 10 per cent, the interest rate of loans being fixed at 5 per cent. In both cases the depreciation-plus-interest cost falls from \$230 to \$207.⁶ In both cases the annual receipts—and the market price of the product that brings in the receipts—are higher than their new long-run equilibrium value by the same per cent. On the other hand, the marginal efficiencies of the two projects have risen unequally. The yield of B_1 has risen from 5 to approximately 9.3 per cent, while that of B_2 has risen to only approximately 7.6 per cent. Thus we must conclude that, on theoretical grounds, there is no reason to assume any difference in the dispersion of the Q 's of short-lived and long-lived projects—and therefore there *is* reason to assume that the patterns of yields are *not* alike.

The argument can be reinforced by taking a pair of extreme cases. Asset E_1 has only a one-year life; asset E_2 has an infinitely long life. Assume that in both cases the long-run-equilibrium stream of receipts, representing a 5 per cent rate of return over cost, is \$230. Since the entire supply price of E_1 must be recovered each year, the allocation of receipts to depreciation and interest must be $S + .05S$; the supply price, then, must be \$219.05, and the interest cost, at 5 per cent, \$10.95. In the case of E_2 , depreciation being nil, the entire \$230 represents the annual return on the invested capital, $.05S$, and S must be \$4,600.

Now consider the effect of a fall in the interest rate from 5 to 4.5 per cent. In the case of E_1 , the annual depreciation-and-interest cost will fall from \$230 to \$228.91—a reduction of less than $\frac{1}{2}$ of 1 per cent. In the case of E_2 , the annual cost will fall to \$207—a reduction of 10 per cent. If the expected receipts in both cases were, say, \$220 plus or minus 5 per cent, project E_1 would remain an extremely poor risk while project E_2 would

⁶ In the case of the five-year project it falls from $200 + 30$ to $180 + 27$ dollars. In the case of the ten-year project it falls from $180.39 + 49.61$ to $162.35 + 44.65$ dollars.

become a certain success. The long-lived project is much more sensitive to changes in the interest rate.

A broader question is now worth asking. Must the factor affecting the elasticity of the marginal efficiency function be identified, as has been done so far in this comment, as the length of life of the fixed capital? Or can it be described in more general terms? A little reflection will show, I think, that the reason for the greater elasticity of the marginal efficiency function for longer-lived projects is the fact that the ratio of the supply price (S) to the expected net receipts (Q) associated with any given yield is higher. This ratio can vary for only one reason: variation in the longevity of the capital. But there is another ratio—that of the supply price to the expected *gross* receipts associated with any given yield—which can vary among projects which have the same length of life. And it can be shown that when this ratio becomes higher the elasticity of the marginal efficiency function becomes greater.

In my argument in support of the assumption that the patterns of receipts are alike for short-lived and long-lived projects, I assumed implicitly that if the patterns of gross receipts from sales were alike for both types of projects, the patterns of Q 's (receipts gross of depreciation and interest but net of other costs) would be alike. Actually this would be the case only if "other costs" were in all cases the same percentage of gross receipts. For the purposes of my analysis it was not only satisfactory but necessary to assume that they were (in order to prevent an irrelevant variable, which should be chained down by the *ceteris paribus* assumption, from muddying the analysis). Yet in reality the ratio of depreciation-and-interest cost to total cost varies among projects. And this variability affects the ratio of invested capital to gross annual receipts, which may be termed the *capital-sales ratio*.

Let us see what happens when this ratio differs between two sets of equally long-lived projects. Assume that projects A_1 , B_1 , C_1 , and D_1 are such that each entails an initial capital investment of \$1,000 and annual labor costs of \$200, while projects A_2 , B_2 , C_2 , and D_2 are such that each entails an equally high initial capital investment, \$1,000, but annual labor costs of only \$100. All eight projects have five-year lives. To keep matters simple, assume that working capital is not needed and that each project is a completely vertically-integrated production scheme, so that no intermediate products have to be purchased. With an interest rate of 5 per cent, the annual costs of each *low-capital-sales-ratio* project ($A_1 \dots D_1$) are \$430 while the annual costs of each *high-capital-sales-ratio* project ($A_2 \dots D_2$) are \$330. Now, if we assume the same pattern of gross receipts for both types of projects (that is, the same corresponding percentage deviations from the zero-profit level of gross receipts at an interest rate, say, of 5 per cent), the percentage deviations of *net* receipts (after deducting labor costs) will not be the same; they will be smaller for the projects having the higher capital-sales ratios. This being so, the marginal efficiencies of the high-capital-sales-ratio projects will lie within a smaller range than those of the low-capital-sales-ratio projects. Therefore the marginal efficiency function of the projects having the higher capital-sales ratios will have the higher elasticities.

According to this analysis, the elasticity of the marginal efficiency function is an increasing function of the capital-sales ratio. The capital-sales ratio, in turn, is an increasing function of (a) the length of life of the capital asset—or, the same thing, the ratio of interest cost to depreciation cost for any given interest rate—and (b) the ratio of depreciation-and-interest cost to total cost. This conclusion may be restated in more straightforward terms as follows: the higher the initial cost of an investment project relative to annual receipts from sales, the higher will be the interest cost relative to receipts from sales, and the smaller will be the change in the interest rate needed to make any given unprofitable project profitable.

LAWRENCE ABBOTT*

*The author is professor of economics at Union College.

The Elasticity of the Marginal Efficiency Function: Reply

Williamson has been able to derive somewhat more general results about the consequences, for the elasticity of the marginal efficiency function, of an increase in the riskiness of investment projects. He shows that they depend not only upon the nature of the allowances to be made for risk but also upon the characteristics of the function unadjusted for risk.

His results can be extended a little further, though the extension does not reduce at all the need for empirical investigation. This extension can be illustrated by considering one set of risk allowances—that in which the expected yield on each project is reduced by the same absolute number of percentage points.

When the unadjusted function is iso-elastic, as I assumed initially (pp. 969-77), it becomes less elastic at each interest rate. Williamson shows that when the unadjusted function is linear, and its elasticity is then higher at low levels of investment than at higher, it becomes more elastic at any interest rate as a result of making the appropriate risk allowances. Clearly, as he states, there must be a function, somewhere between his and mine, for which elasticity falls just fast enough with increases in investment to keep the elasticity of the adjusted function equal to that of the unadjusted function at each interest rate. Then for any unadjusted function for which the rate of decline in elasticity with higher investment exceeds the norm, the adjusted function will be more elastic at each interest rate than the unadjusted; and vice versa if the rate of decline is less than this.

The characteristic required of the unadjusted function in order that there be no change in elasticity as the result of making the specified allowances for risk, is this: Let r_1 be the interest rate, and b be the allowance for risk on each project. Then the ratio of the elasticity of the unadjusted function at a rate of interest $(r_1 + b)$ to its elasticity at r_1 must be equal to the ratio

$$\frac{r_1 + b}{r_1}.$$

Or, to illustrate it numerically, if the interest rate is 6 per cent and the allowance for risk is uniformly 12 per cent, the elasticity of the unadjusted function at 18 per cent must be three ($= 18\%$) times as high as it is at 6 per cent.

Whether this condition is likely to be realized or not is something that to my mind defies a guess. It appears stringent, but actually with a linear function the ratio of the elasticity is greater than it need be to meet this condition, and in the absence of empirical knowledge it can hardly be dismissed as an impossible or even unlikely condition.

As Abbott points out, we cannot be surprised to find that the elasticity of the function is the same whether projects are short-lived or long-lived, when the notion of *ceteris paribus* is understood to mean either that (1) the patterns of specific marginal efficiencies or (2) the patterns of Q 's adjusted for differences in depreciation allowances are the same, since each interpretation amounts to the assumption of identical functions. Whether the procedure is illegitimate, as he asserts, is however a question that depends upon the marital state of the parents. I thought that the hoary respectability of the conventional arguments would legitimize my procedures since the latter stemmed from these arguments and tried to answer them; for these arguments are usually set out as though the content of the *ceteris paribus* assumption made no difference whatsoever. I am ready to agree that if the usual arguments had not been persuasive to some (other than myself) then I ought not to have assumed what I was intent on demonstrating. But were they not?

Abbott finds as I did (p. 965) that when the patterns of expected increments or Q 's, the Q 's in each case being the project's annual "receipts gross of depreciation and interest but net of other costs," are the same, the elasticity of the function will be higher when projects have a longer life. And the burden of his comments is to assert that this is "*the* correct interpretation" of the *ceteris paribus* notion.

His argument is strong, though I am not convinced that it is complete or that it necessarily applies in the context in which the main point is commonly made—that the response of investment in, say, residential construction and other very durable assets to a change in interest rates will be greater than for investment in short-lived equipment and inventories.

He rests his argument upon the notion that when differences in prospective yields exist, this reveals a situation of long-run disequilibrium (see also my original paper, pp. 983-84). Looking at the sources of such a disequilibrium (say, changes in demand or costs) he can find no reason for supposing that their effects upon the patterns of Q 's for long-lived projects would differ from their effects upon the comparable pattern for short-lived projects.¹ Hence it follows that the patterns of the Q 's would be no different, and so on. But there

¹ I believe he has made his own argument, however, unduly restrictive, for one thing, by seeking to limit the number of projects in the array. He is surely incorrect in asserting, as he does in his footnote 4, that when the number of projects is limitless the elasticity of the marginal efficiency function becomes indefinitely large. He has presumably failed to notice that it is the *relative* change, and not the absolute change, in investment that matters.

is at least one reason which rests upon differences in durability for expecting a disequilibrating change to affect the patterns of Q 's in different ways.

Suppose that changes in wage rates (or technology) have been occurring over recent years. Since the less durable assets will, on the average, be the younger, we may reasonably expect them to be more nearly appropriate at a given date to current and prospective wage rates (or the state of technology) than are the older or more durable assets. From this it would follow that their replacements would show a *smaller* differential advantage over those that become due for retirement than is true of the advantage of the replacements for the more durable assets over those these latter are to replace. Then, the pattern of Q 's for long-lived assets will tend to be *more* dispersed than the comparable pattern for short-lived assets, and the elasticity of the marginal efficiency function for the long-lived assets could easily be lower.

Or, supporting Abbott's view, it could be argued that the sponsors of long-lived projects would normally tend to make their estimates of the Q 's on the basis of the relatively stable parameters, discounting more ephemeral developments, while those concerned with the shorter-lived projects would have to concern themselves much more with the day-to-day changes. If this were so, the elasticity of the function for long-lived projects would tend to be higher.

Once again, though, it seems that we dare not *reason* our way to a firm conclusion. Abbott may be correct in holding that the developments which create long-run disequilibria may modify the patterns of the Q 's for long-run and short-run projects in the same way, but his argument rests again upon giving to the *ceteris paribus* notion a special meaning. And I would instead prefer to be guided by what, if anything, the facts disclose.

LORIE TARSHIS*

*The author is professor of economics, Stanford University.

Foreign Exchange Guarantees and the Dollar: Comment

In the June 1961 issue of the *Review*, S. T. Beza and Gardner Patterson express doubts about the value of exchange guarantees [1]. Their first argument is that, if the guarantees are credible, "a system of exchange guarantees whose major *raison d'être* appears to be to protect our gold stock ends up by greatly reducing its usefulness for international reserve purposes" [1, p. 383]. Their second argument is that, if the guarantees are "to prove not credible, then, to institute the system would be a disaster, for it would fail in its purpose, cost us real goods and services if implemented, and, if abandoned, would be a signal for new runs" [1, p. 385].

Beza and Patterson correctly recognize that exchange guarantees would be difficult to negotiate and they might not be universally applicable. Problems would arise in constructing fences between the dollar holdings subject to the guarantee and other dollar holdings. It is necessary to distinguish those particular foreign holders eligible for the guarantee from those who are not eligible, to distinguish those dollar assets held by eligible holders subject to the guarantee from their other dollar assets, to define unambiguous conditions for

determining when the guarantee would be invoked, and to determine how payment under the guarantee would be effected. Moreover, it is important to anticipate, as Beza and Patterson do, the measures that would have to be taken if, sometime after a country received payment on a guarantee, it devalued its currency by an amount proportional to the devaluation of the dollar, or by a greater, or lesser, amount.

Despite these real problems, there are situations in which exchange guarantees might prove useful, and it would be unfortunate if the case presented by Beza and Patterson detracted attention from their merits. By considering only two extreme situations, one where a guarantee is fully credible and a second where it loses its credibility, Beza and Patterson have failed to acknowledge the major arguments for the guarantee.

I. The Beza and Patterson Analysis Reviewed

Their first point is that, if the guarantees are credible, dollars would become such an attractive reserve asset that few official foreign institutions would acquire or hold gold as reserves, with the consequence that the United States might again be subject to a golden avalanche. Gold apparently would become increasingly useless to the United States simply because foreign official institutions, content with the guarantees, would not seek to convert their holdings of dollar assets into gold.

This view appears to presuppose that the United States could run payments deficits forever because foreigners would be perfectly willing to accumulate dollar assets ad infinitum.¹ By giving the guarantee, the United States would never need to devalue because of a shortage of acceptable assets for financing a deficit. It is true that the United States would have to pay interest on a larger volume of dollar assets held by foreigners, but U.S. interest rates might be lower than in the absence of a guarantee because there would be no need to pursue an interest-rate policy designed to protect the U.S. gold reserve.

But is it really possible that, merely by giving the guarantee, the United States would be forever immune from the discipline of the balance of payments? That foreigners would look with equanimity on the growth of U.S. short-term liabilities to foreigners many times that of the U.S. gold stock? The assumption (which they themselves characterize as "heroic") that a guarantee can be fully credible independently of the U.S. net reserve and balance-of-payments position, removes any problem of significance so that the conclusions based on this assumption are irrelevant.

A guarantee might lose its credibility if the suspicion were to arise that the United States might not be willing to honor the guarantee after a devaluation. The most likely basis for doubt about the credibility of the guarantees is a high cost of honoring it, a cost which, as Beza and Patterson emphasize, might become exceedingly large if it is impossible to build a tight fence between

¹ In this never-never world, the United States nevertheless still might want to devalue if maintaining an overvalued exchange rate had undesirable deflationary consequences for the United States. Whether the guarantees would then be costly to the Treasury would depend on whether the amount of the dollars subject to guarantees exceeded the additional amount of gold acquired by the United States as a result of the guarantee.

foreign-owned dollar assets which we wish to guarantee and other foreign-owned dollar assets.

Two points should be noted: First, part or all of the direct financial cost of honoring the guarantees could be met from the revaluation profits on the U.S.-owned gold. These profits would accrue on all the U.S.-owned gold, while only a part of the dollar assets held by foreigners would be eligible for payment under the guarantee. Today only two-thirds of the short-term dollar assets held by foreigners are in the hands of official foreign institutions. If other countries devalued along with the United States, they would not be eligible for payment under the guarantee.

Second, the financial burden of honoring the guarantee would only become translated into a real burden on the United States, in the sense that it would have to transfer a larger volume of goods and services to foreigners, if foreigners were to incur larger payments deficits with the United States because of the larger dollar value of their reserves.² This may, of course, happen, but the outcome remains conjectural. The value of their reserves in terms of their home currency remains unchanged, even if it increases in terms of dollars. It does not follow that the devaluation will mean that the countries who benefit under the guarantee are likely to have their payments balance shift from a surplus to a deficit.

If the net impact of the U.S. devaluation is to achieve a balance in the U.S. external accounts, the financial cost of honoring the guarantee is not likely to have a significant counterpart in terms of a real cost to the United States because the latter would have to make available a larger volume of goods and services to foreigners. There may be a foregone gain, however, since foreigners might feel a lesser need to build up their dollar reserves, so that the United States would not be able to run payments deficits in the future, and acquire unrequited goods and services, to the extent that it would otherwise be able to.

The problem of the real costs involved in honoring the guarantee cannot be divorced from the impact of the guarantee. To the extent foreign official institutions accept the guarantee at its face value, the United States will be able to run a larger payments deficit. When and if the United States subsequently devalues, it will be subject to an adverse change in its terms of trade; this increase in U.S. import prices relative to U.S. export prices will result in a decline in U.S. income. This is the real burden of the devaluation, separate and apart from any real burden of the guarantee. But to the extent that the guarantee enables the United States to delay the devaluation, it will delay also the adverse shift in the terms of trade with its concomitant loss of real income.

Whether the real burden of honoring the guarantee will exceed the saving in real income from delaying the adverse shift in terms of trade is conjectural. It is quite possible that the real burden may be less than the forestalled de-

² There may be a real burden on the United States even if there is no financial burden, i.e., even if the U.S. gold revaluation profits are more than adequate to cover the cost of honoring the guarantee.

cline in real income; in any event the issue is far more complicated than Beza and Patterson make it.

II. *Arguments for Guarantees*

An exchange guarantee appears advantageous for a number of reasons. First, a change at the margin, in the reserve-holding preference between dollars and gold might enable the United States to run a larger payments deficit than it is now able to, given the present U.S. gold reserves. A guarantee thus becomes a device for increasing reserves and international liquidity. A guarantee does not have to be fully credible to achieve this result. (Whether the United States should be in a position to run a larger deficit is a different matter, although the continuation of the present payments imbalances and the intractability of the deficits and surpluses suggest that more reserves may be needed to give time for adjustment.)

But even if the guarantee were not at all effective in altering the preferences of foreigners for holding gold or dollars, the guarantee may still be effective in situations in which the dollar-gold parity is appropriate but in which a run on the dollar by private individuals would, in the absence of the guarantee, ignite a run on gold by official foreign institutions. Such a flight into gold might force the United States to suspend gold convertibility. While no foreign central bank wishes to cause such a calamity, it does feel an obligation to its own stockholders. Each of the foreign central banks, acting independently to protect its immediate and obvious interests, would contribute to fracturing the system. No one wishes such a result, but individually each country is relatively defenseless against it.

Another argument for the guarantee is that it becomes somewhat of a barrier against retaliatory devaluations; foreign central banks holding guaranteed dollar assets would be deprived of the chance to use the capital loss on their holdings of dollar assets as an excuse for a countering devaluation. In this case the guarantee may be a necessary element in achieving a successful devaluation of the dollar should it become clearly overvalued; the guarantee limits similar devaluations by other countries. Beza and Patterson emphasize the other side of this coin—that because of the cost of honoring the guarantee, the United States might not devalue when economic circumstances suggest that it should.

Joining the issue at this level involves several imponderables. The issue is quite clear—it is whether the financial cost of a devaluation, in the sense of the loss on the home-currency value of foreign-owned dollar assets, will be assumed by the foreign country, or made good by an exchange guarantee.³ While Beza and Patterson acknowledge that the financial cost of honoring the guarantee may prevent the United States from devaluing, they fail to acknowledge that the financial cost otherwise borne by other countries may force a retaliatory devaluation, in which case the devaluation of the dollar would be unsuccessful. It is, of course, possible that some foreign countries

³ If a guarantee had been arranged, it is still not clear that the cost of making good the loss to foreigners would exceed the gold revaluation gains of the United States.

might grudgingly take the capital loss, rather than devalue to avoid taking a capital loss.

Finally, certain matters of equity would become important following any change in the gold parity of the dollar. In the nature of things, the likelihood of the devaluation must be denied until it occurs. But if it does occur, then the U.S. Treasury will be the beneficiary of revaluation profits on its holdings of gold and foreign currencies, and private U.S. investors will secure capital gains on their foreign investments, while foreigners will suffer losses on their holdings of dollar assets. Politically it may be exceedingly embarrassing to take such revaluation profits, while causing foreigners to take revaluation losses. In such circumstances, compensation might be in order; part of the U.S. revaluation gains might be transferred to foreign official institutions to offset their loss.⁴

III. Conclusion

The critical issue appears to be whether the advantages of the guarantees exceed their costs. These costs are the real costs that would fall upon the United States if it devalues and chooses to honor the guarantees, in excess of the costs that it might bear if, in the absence of a guarantee, it devalued and nevertheless chose to make compensatory payments in view of its pledges. The advantages of the guarantees, aside from the equity consideration noted earlier, include the increased flexibility available to the United States in financing larger payments deficits than are otherwise possible, and in thus increasing international liquidity, and the increased cohesiveness it gives the payments system against a breakdown that might ensue if most holders of dollar assets sought to convert them to gold at the same time. Whether the advantages outweigh the costs is essentially an empirical matter not easily given to measurement. Few advocates of guarantees claim that their adoption solves all the problems encountered in achieving a stable international payments system, and yet their possible contribution to such a system cannot be overlooked.⁵

R. Z. ALIBER*

REFERENCES

1. S. T. BEZA AND GARDNER PATTERSON, "Foreign Exchange Guarantees and the Dollar," *Am. Econ. Rev.*, June 1961, 51, 381-84.

*The author is on the research staff of the Committee for Economic Development. The views in this comment are not necessarily those of C.E.D. or of any of its subcommittees. He is indebted to Frances K. Topping for numerous editorial suggestions.

⁴It can be argued that it is preferable to arrange compensation after a devaluation rather than before, since this eases the problem of negotiating, and the amount of compensation can be tailored to the U.S. gold revaluation profits. But if one does feel that this equity problem is important, and that the United States should honor the statements made by various public officials indicating that the dollar price of gold would remain unchanged, it would seem advantageous to obtain the benefits of a guarantee if one is going to bear the costs.

⁵Most advocates of guarantees favor their adoption as part of major reform of the international financial system, and it is hard to see how any such reform could be negotiated without including guarantees. Yet guarantees may be useful even in the absence of such reform.

Foreign Exchange Guarantees and the Dollar: Reply

Aliber's "Comment" contains several interesting points and we welcome this additional discussion of an important question. We are pleased to find that he agrees with one of our major conclusions—that exchange guarantees are not a simple device—and he is no doubt correct when he says that some of the issues are "far more complicated" than we suggested.

There are a few important points in his comment with which we disagree and it is only these that we will discuss here. His first criticism of our note seems to rest on his assertion that our view that a credible guarantee would greatly reduce the usefulness of gold for international reserve purposes "... appears to presuppose that [with a credible guarantee] the United States could run payments deficits forever because foreigners would be perfectly willing to accumulate dollar assets *ad infinitum*." We presuppose nothing of the kind. What we do say is that with a credible guarantee gold becomes inferior to the dollar, and that countries choosing between *these two* as international assets will opt for the dollar. This does not imply that the dollar becomes impregnable. Foreigners accumulating foreign exchange, whether dollars or gold or something else, are performing an act of saving, and the rest of the world in any one time period may choose to save more or less than in the past, and it may elect to alter the form in which its savings are invested. A decision by the rest of the world to save more in the form of, say, steel mills and less in foreign exchange holdings, or a decision to increase consumption may be sufficient to erase a United States balance-of-payments deficit. That foreigners may decide to stop adding to their dollar holdings in favor of some other form of investment, irrespective of the existence of exchange guarantees, should be obvious.

Aliber states that we have failed to acknowledge the major arguments for an exchange guarantee. This may be correct, but the evidence he advances for this view is not overwhelming. The first reason he puts forth for guarantees is that they "might enable the United States to run a larger payments deficit than it is now able to. . . ." Exactly; we differ only in that we stated it as "increasing the amount we could borrow at any one time on short term from abroad. . . ." Further, we agree with his argument that a guarantee need not be "fully" credible to achieve this end; it is a matter of changing preferences, at the margin, among possible reserve assets. More generally, in presenting our discussion in terms of the two extremes we may have ignored some of the advantages as well as some of the difficulties associated with exchange guarantees. His argument that guarantees offer some barrier against retaliatory devaluation has some merit, but we see no reason, especially with the existence of the International Monetary Fund, for considering seriously "competitive devaluations" as a problem now or in the future.

Aliber's argument for guarantees based on equity considerations requires more space than is available here. Equity considerations are important. We would suggest, however, that there is little evidence that devaluing countries, including major reserve centers, have found it politically embarrassing to take unto themselves fully the devaluation "profits."

In his conclusion, Aliber appears to adopt the view that compensation should be paid to foreign holders of dollars in the event that the dollar is devalued. He states that the real cost of an exchange guarantee is the excess of the "real costs that would fall upon the United States if it devalues and chooses to honor the guarantees" over the "costs that it might bear if in the absence of a guarantee it devalued and nevertheless chose to make compensatory payments in view of its pledges." Is this a useful way in which to view the choices available? We fail to see why, in the absence of guarantees, the United States would "nevertheless choose to make compensatory payments." The United States has been a generous nation, but would this not be considered going too far?

STERIE T. BEZA
GARDNER PATTERSON*

* Beza is on the staff of the staff of the International Monetary Fund and Patterson is professor of economics at Princeton University. The opinions expressed by Beza are his own and do not necessarily reflect the official views of the Fund.

Stochastic Reserve Losses and Expansion of Bank Credit: Comment

Orr and Mellon present in a recent issue of this journal an analysis of expansion of bank credit that introduces uncertainty into the model of bank decision-making [1]. Unfortunately, certain aspects of their model and discussion of it are subject to criticism. The one that stands out most clearly, perhaps, is that their results depend upon the assumption that the return on funds that are lent out or invested does not exceed the charge a bank incurs when it borrows funds to cover losses.

Orr and Mellon's analysis makes use of the following variables and parameters: R , excess reserves acquired by the bank at the beginning of the period; D , deposits created by the bank; L , the loss of reserves the bank suffers during the period; i , the rate of return on loans; r , the rate payable on funds borrowed to meet losses; M , a lump-sum penalty payable if funds must be borrowed; and ρ , the legal reserve ratio. The largest volume of cash outflow that can occur without causing a reserve deficit, the outflow that makes excess reserves equal to zero, is $v = (R - \rho D)/(1 - \rho)$. L is a stochastic variable with probability density $\phi(L)$. The bank's aim is to maximize its expected profit, P , where

$$(1) \quad P = iD - M \int_v^{\infty} \phi(L) dL - r \int_v^{\infty} L \phi(L) dL.$$

The mean of $\phi(L)$ is assumed to be a linear function of D , specifically, kD , k being < 1 in all of the examples in the paper. Orr and Mellon investigate the values of D that maximize (1) given various assumed values for the parameters.¹

¹ Orr and Mellon make other assumptions, e.g., that the variance of $\Phi(L)$ is independent of D , that are not at issue here.

A key characteristic of (1) that Orr and Mellon point out in a footnote to their Table 1, but do not emphasize, is that if i exceeds r , the bank maximizes profits by expanding D indefinitely. This is evident if one examines the profit function. As D increases, revenue, iD , increases by $i\Delta D$. But what happens to cost, the sum of the second and third terms in (1)? As $D \rightarrow \infty$, the integral $\int_0^\infty \phi(L) dL \rightarrow 1$ and so the term $M \int_0^\infty \phi(L) dL \rightarrow M$, a constant. If one considers the other term it is apparent that $\int_0^\infty L\phi(L) dL$ is a truncated expected value of L which $\rightarrow kD$ as $D \rightarrow \infty$, so $r \int_0^\infty L\phi(L) dL \rightarrow rkD$. With $i > r$ and $k < 1$, consequently, expected profit, P , increases continuously as $D \rightarrow \infty$. This property, it should be noted, is independent of the volume of excess reserves acquired by the bank at the beginning of the period. A bank with no or negative excess reserves would maximize expected profit by expanding D indefinitely.

Now the applicability of Orr and Mellon's model to banks in the United States, where the Federal Reserve frowns on borrowing reserves to make a profit, is unclear. Much more important, however, is the fact that banks in various other countries where no prohibition against borrowing to make a profit is in effect, have never been observed to expand credit indefinitely though the rate on loans has exceeded the bank rate on many occasions. The model implies behavior, in other words, contrary to that observed.

One can undoubtedly preserve some of Orr and Mellon's implications by making *ad hoc* adjustments to their model; for example, by making i a decreasing and r an increasing function of D . Their comparison of expansion under conditions of uncertainty with expansion as described by the traditional "deterministic" analysis cannot, however, be saved in this way.² A falling i and rising r does not rule out maximum profit values of D much larger than those predicted by the deterministic analysis and larger than those observed in actual practice.³

Orr and Mellon's discussion of what uncertainty implies about the creation of money by a many-bank banking system is also unsatisfactory.⁴ It may be readily granted that the standard textbook exposition of money creation by a many-bank system leaves much to be desired in its description of actual individual bank behavior. Its usefulness consists ultimately in its emphasis on the fact that individual banks will seldom if ever act like a monopoly bank, but that the banking system as a whole nonetheless does create money—a fact easily verified by observing the response of the money supply to a change in the reserves or monetary base of the system.

² Orr and Mellon identify the deterministic analysis with the assumption that $L = kD$ but always assume that $0 \leq k < 1$. The standard textbook illustrations assume that $k = 0$ for a monopoly bank (ignoring cash drain) and that $k = 1$ for a single bank in a system of banks.

³ Orr and Mellon fail to make clear exactly why the profit function (1) should not be reapplied in the next period to any excess reserves the bank has then, or in what respects what they describe as marginal credit expansion differs from total credit expansion. Their discussion of money creation by a many-bank banking system about to be noted indicates, however, that they do not envisage a sequential application of (1) to excess reserves resulting solely from the R of the initial period.

⁴ See [1, pp. 620-22].

Orr and Mellon's treatment of this matter is inferior to the familiar one. They conclude that credit expansion will be significantly less in a many-bank system than in a single-bank system. This conclusion stems from their assumption that the variance of the $\phi(L)$ applicable to a monopoly bank will be the sum of the variances of the $\phi_i(L_i)$ applicable to individual banks in a system of banks. The relevance of this assumption is not clear, and the conclusion conflicts with the observed behavior of the larger but still far from monopoly banks in our system whose aim in present-day circumstances is to hold virtually no excess reserves. Their exposition implicitly rules out, moreover, the relevance of the step-by-step, period-by-period, type of expansion described in the textbooks which is consistent with observed behavior.

In sum, Orr and Mellon's discussion is suggestive and moves in the right direction, but it fails to add significantly to our ability to explain actual behavior. Individual banks sometimes do hold excess reserves, but Orr and Mellon's model will not, in general, predict bank behavior correctly. In describing money creation by a many-bank banking system, moreover, we still must fall back on the type of step-by-step analysis familiar to all economists.

H. LAURENCE MILLER, JR.*

REFERENCES

1. D. ORR AND W. G. MELLON, "Stochastic Reserve Losses and Expansion of Bank Credit," *Am. Econ. Rev.*, Sept. 1961, 51, 614-23.

*The author is assistant professor of economics at the University of California, Los Angeles. He is indebted to Karl Brunner for a discussion of the points considered in this note.

Stochastic Reserve Losses and Expansion of Bank Credit: Reply

Miller's most devastating criticisms of our paper are two: (1) in our examples, we ignore the case in which i , the rate of interest on loans, exceeds r , "the rate payable on funds borrowed to meet losses [of reserves]" (as he puts it), or more properly "a penalty on each dollar of reserves the bank is short" (as we defined it on page 617 of the paper in question); and (2) our exposition of the credit expansion process is "inferior" and "unsatisfactory," since it "rules out . . . the relevance of the . . . period-by-period type of expansion described in the textbooks which is consistent with observed behavior."

1. Miller's alteration of the definition of r as noted above is critical: he has attempted to substitute a simple out-of-pocket cost for the penalty in our profit function. The literature on inventory decisions (to which we appealed for analogy in the first paragraph of our paper) is explicit regarding the appropriateness of the use of opportunity costs in the type of situation with which we deal. The profit function is, after all, an attempt to express the ramifications of all the various decision alternatives open to the firm (or bank) in utility (or dollar) terms. If this quantification is successful, intelligent policy measures can be obtained for the enterprise by simple mechanical manipulation of the profit function (for example, the manipulations in the

appendix of our paper). In the sixth example of Table 1 (p. 619) we tried to illustrate the absurdity of precisely the profit function coefficients suggested by Miller. Note b to that example points out that by setting r greater than i , one "takes into account only the money gained, and ignores such nonquantified factors as reputation for soundness." It should be noted that if the response of the profit function to changes in r and i is not linear as we have assumed [equation (4), p. 617], the stricture quoted in the preceding sentence would not necessarily be valid. Since our analysis is illustrative, rather than empirical, we used this linear response for computational viability. If it can be shown that the use of more satisfactory alternative forms of these responses jeopardizes the validity of our conclusions, we will defer to a valid criticism of our approach: meanwhile, Miller's rearrangement of the magnitude of r and i is not admissible for our model.

2. In elementary expositions of the credit expansion process, one encounters cascaded "generations" of banks; each generation receives as excess reserves the loans extended as a preceding generation expands credit in response to an excess reserve position. Miller associates a heuristic time period with each round in the credit expansion process, and he mistakenly identifies this interval with the time period referred to in our paper, the period at which the reserve positions of member banks are reviewed by the Federal Reserve System. (Nowhere do we use the word "period" to refer to any other time span: longer intervals are irrelevant because of the assumptions of footnote 4, p. 616; shorter intervals are ruled out by the assumptions of footnote 6, p. 616.) Miller is correct in suggesting that we take into account only one period of activity (which we attempt to justify in footnote 4); however, we do not thereby ignore all rounds of the credit expansion process which succeed the first, as he erroneously concludes. Our quantitative results on the systemwide expansion process (pp. 620-21) are in fact based on quite the opposite assumptions; we see the entire response as taking place within one of our periods.

Miller's misunderstanding of our paper is not confined to these two central points. We assume that the variance of the probability distribution of cash flows into and out of the banking system is invariant with the number of banks, and analyze the effect of the number of banks on the theoretically optimal volume of credit expansion. Miller finds this assumption indigestible on the ground that it conflicts with "... the observed behavior of the larger but still far from monopoly banks in our system whose aim is to hold virtually no excess reserves." That our assumption is not incompatible with Miller's observed empirical fact is evident from the conclusion that we draw: as the number of banks in the system decreases, the total precautionary reserve balances also decrease. For any bank the optimal level for these reserve balances is a function of the standard deviation of cash flows confronting the bank. A variance of 100 confronting a single bank leads to precautionary balances of some multiple of 10 (say $10k$); the same variance confronting 10 identical banks leads to total precautionary balances of $(10)^{3/2}k$; with 100 identical banks, precautionary balances are $100k$. We also mentioned the greater propensity of larger banks to make use of the federal funds mar-

ket, which may be taken as an alternative to (or reinforcement of) our explanation of Miller's observation.

In footnote 3, Miller raises two further points: we overlook the possibility of a sequential decision process, i.e., the individual bank might use a profit function similar to the one in our paper once each period; and we do not define the difference between marginal and total credit expansion.

In our analysis, we did not attempt to program the operations of a commercial bank: rather, we tried to draw conclusions regarding the effects of uncertainty upon the expansion of bank credit. In order to maintain direct comparability to standard results on excess reserves and the expansion of credit, we dealt with a highly artificial model. Any relevance that a sequential formulation might have for the task we undertook was deliberately dissipated by the assumptions of footnotes 4 and 6 of our paper, noted earlier in this discussion. It is quite true, but nonetheless irrelevant, that a carryover of excess reserves from one evaluation period to the next is indistinguishable from an injection of new free reserves at the beginning of the second of these evaluation periods.

The distinction between marginal credit expansion (net deposits created in response to an extra dollar of free reserves) and total credit expansion (the ratio of total deposits to total reserves) should be a familiar one.

DANIEL ORR AND W. G. MELLON*

*The authors are respectively, assistant professor, Graduate School of Business, University of Chicago, and associate economist, The Chase Manhattan Bank.

BOOK REVIEWS

General Economics; Methodology

Analyse structurale et méthodologie économique. By ÉMILE LÉVY. Paris: Collection d'Économie Moderne, Éditions Génin, 1960. Pp. 291. NF30.

A four-page table of contents divides the volume under review into two *titres*: I, The Elaboration of a Structural Analysis; and II, The Integration of Structural Analysis into Economic Theory. These are further divided into *sous-titres*, chapters, sections, subsections, and subsubsections. There is no doubt about the author's intention to cover, at all costs, as much ground as possible. Past contributions, as remotely related as the sociology of knowledge and the Leontief system, are reviewed at a very quick pace. Within a volume of such a size, the author could not devote more than a couple of pages to the discussion of such important contributions as Marx's, Max Weber's, or Köhler's and Koffka's. Much too often the presentation of each contribution and the author's own comments on it takes the form of a table of contents: a series of brief paragraphs, each marked by a dash or a prominent dot.

In spite of the tremendous number of contributions reviewed by the author, there are regrettable omissions. Herbert Spencer is not mentioned at all, although a full section is devoted to biomorphism in social sciences. Alfred Marshall's biomorphism is mentioned only in passing. In the discussion of the relationship between business cycles and evolution, no reference is made to Marx or to Schumpeter. Instead, time and space are wasted on some minor, mainly recent, contributions. Even as a history of thought on the concept of structure the first part of the volume is unsatisfactory, for the reason that the author seldom, if ever, refers to the original sources. Köhler, Koffka, Max Scheler, Max Weber, and Veblen are presented through the eyes of some of their commentators. Strangely enough, Max Weber's theory of ideal types is summarized after Talcott Parsons, while the latter's, after Bourricaud.

The author's desire to *trop embrasser* is most conspicuous in the second part of the volume. It covers every chapter of economic theory; no name of an author of some repute is left out. This reviewer, at least, fails to see any connection between the concept of structure and such topics as Leontief's system, Sweezy's kinky demand curve, or even international trade.

It goes without saying that such a work fails to reveal the author's definite position on the nature and the role of the concept of structure. In the concluding chapter he admits that his purpose in writing the book was merely that of warning the reader about the obstacles connected with the concept of structure and making him thereby aware of these obstacles. This reviewer however, doubts that even this goal has been reached by the author. The well-informed reader knows—what the author appears to ignore in his work—that the concept of structure is a response to the impossibility of describing a qualitative world with aid of the structureless notion of number alone, and

that the opposition between the two is irreducible. The noninitiated cannot learn this object lesson from Mr. Lévy's survey of a vast number of subjects, many quite unrelated to his main topic.

NICHOLAS GEORGESCU-ROEGEN

Vanderbilt University

Allgemeine Wirtschaftspolitik. Vol. 1: *Grundlagen*. By DR. HERBERT GIERSCHE. Wiesbaden: Gabler, 1960. Pp. 356. DM 8.70.

This book, the first volume of a work intended to cover not only the principles but also the main branches of economics, is another in the series edited by Professor E. Gutenberg of Cologne. *Allgemeine Wirtschaftspolitik* is divided into six generous chapters. Chapter 1 lays the introductory groundwork outlining the subject-matter of economic policy and politics in general. Chapter 2 presents a short survey of the relevant problems of economic policy in the realm of social philosophy. Chapter 3 is devoted to welfare economics and serves as background for the consideration of the important economic policy systems, developed in Chapter 4.

Chapter 5 describes the forces in our present-day pluralistic society which attempt to influence the economic life and policy of the state. This section also contains a hypothesis as to the economic behavior of political parties and governments, and a short review of the goals, tasks, and possibilities of central banks, as well as those of the higher regional and communal authorities, insofar as they have an economic policy. Chapter 6 familiarizes us with the considerations which could lead to somewhat rational decisions and to a well-founded value judgment in economic policy.

On all these points Giersch's treatment shows in many respects interesting and independent thinking. The urgent problems of economic policy-making receive careful analysis; the descriptive and historical parts are rich in detail, informative and lucid, and well balanced. Good bibliographies follow each chapter. The despised tribe of nonmathematicians will rejoice at the complete absence of the usual arcanum of mathematical symbols and formulas.

Within the above-sketched framework, Giersch devotes perhaps somewhat more space and attributes more emphasis than expected to two problems. The first problem concerns the conflicts of goals and interests in the realms of social and economic policy. These conflicts represent the imperfectness of all human arrangements, and, unless they demand outright that we make clear decisions for or against individual ethical principles, they force us into compromises and solutions which are limited by some kind of a drawback. The second problem stems from the uncertainty, which lies like a veil over the future and over the economic reality of yesterday and today. Since we are not permitted to reach full certainty, every decision hides a risk, and at most we can only interpret pronouncements about socio-economic relationships as provisionally confirmed hypotheses; thus in reality and in science there is always room for positive criticism and constructive doubt.

Allgemeine Wirtschaftspolitik is a thoughtful and stimulating book, and a contribution on several levels. We are looking forward to its second volume.

GEZA GROSSCHMID

Duquesne University

Principles of Economics. By C. E. FERGUSON AND JUANITA M. KREPS. New York: Holt, Rinehart and Winston, 1962. Pp. xii, 852. \$7.95.

The authors, conceding that we already have "excellent texts," offer a fuller treatment of price stability and growth to supplement the now customary emphasis on full employment. The gap is being filled by others as well (thus Samuelson's index had 10 page references to inflation and none to growth in 1951, but 83 to both subjects in 1961, the work under review having 81), but this addition can be welcomed on its own merits. The book is well written; its organization has new features; its forte is rigorous proof of principles.

Seven algebraic and geometrical appendixes deal with such recondite matters as the classical solutions of the duopoly problem, the derivation of the production-possibility curve, and the optimum conditions of factor and product substitution. The reviewer would not merely leave these "to the discretion of the superior student": he would move most of them outright to a text on intermediate theory—i.e., to its appendixes. Until our first course does more for the mass of undergraduates (future voters), it is doubtful efficiency to use 6 or 8 per cent of the space for one or two brilliant students, sometimes none, per class.

If the 40 text chapters and the appendix on accounting are completed in 80 assignments—21 chapters are designated for one-semester courses—an average student would use probably 45 to 60 minutes per preparation. This would call for a book of readings to accompany the text. The popularity of such readings and the standard 700-900 page length of texts tell the reviewer that his preference for a book 500 pages longer puts him in a minority so small that no producer (since the death of Taussig and retirement of Fairchild, Furniss, and Buck) will cater to it. Outside readings cannot supplement the text as well as an author himself could do with additional detail; and readings rarely command the student's or teacher's full attention.

The first half of the book under review is divided as follows: (1) goals, economic laws, resources, and the operation of a market economy; (2) supply, demand, and national income; (3) most of employment theory; (4) money and public finance; and (5) a "synthesis of the classical and Keynes system" (using Hicks) plus comments on economic policy. The chiefly microeconomic, or second-semester, sections are (6) the firm, competition, and pricing; (7) control of business, labor, and agriculture; (8) income distribution; (9) "A Review of Theories and Controls"—chiefly cost-price inflation, welfare economics, and workable competition; (10) international trade—emphasizing the recent United States payment deficits; and (11) comparative economic systems and development. Parts 2, 3, 4 and 6 comprise more than half the volume. Titles of sections and chapters are introduced intriguingly by such words as "Objectives," "Policy," and "Controls."

The space given to each topic is always a matter of opinion. The reviewer regrets that wage, rent, interest, and profit theory are squeezed into one chapter (plus the treatment of liquidity preference under employment theory), granting that there are chapters on marginal productivity and income inequality also. Analysis of occupational pay differences is down to eight lines. One may question whether time of elementary students should be allocated to

welfare theorems, input-output data ("the most important table in the book," however, in the authors' view), and brilliant but not yet established hypotheses of Ackley, Baumol, and others—especially the authors of the 1959 Joint Economic Committee *Staff Report on Employment, Growth and Price Levels*.

The orientation of the book toward theory, anticipating a good deal of the standard intermediate course, will call for help from the instructor in such passages as those on the Domar and Harrod growth models. In teaching this book, as with others, wider than usual divergences of the real world from theory should be mentioned in class: these are sometimes but not always indicated by the authors. Teachers may also note when practical proposals, reported if not always endorsed, do not necessarily follow from the proven theories. The reviewer has sent the authors his own suggestions of detail, along these and other lines, for the second edition he anticipates in three or four years.

This is a promising text for teachers desiring to emphasize principles. Perhaps the ordinary undergraduate with good instruction will prove that he can "take it," or perhaps the book will match the proved appeal of Boulding's *Economic Analysis* for superior students. It was worth while to read, and should be also to teach. The reviewer regrets that he could not have used it in class before attempting an appraisal.

SIMON N. WHITNEY

Rutgers—The State University

The American Economy. By B. G. FISHMAN AND L. FISHMAN, in collaboration with others. Princeton: Van Nostrand, 1962. Pp. xxii, 822. \$7.95.

This recent elementary textbook should perhaps bear the subtitle: history, institutions and public policies. It is a collaborative work including chapters by ten other writers in addition to the authors listed above.

The purpose of the book, as indicated in the preface, is to discuss those aspects of economics which are likely to be useful "in the every day life of a college trained citizen of the United States. . . . Theory has not been ignored, for theory has much to contribute in understanding our economy. But those refinements of theory useful primarily to a small group of professional economists have been avoided." Rarely do texts fulfill their "prefatory intentions," but this one does. One would wish to question, however, the choice of theory which the authors consider to be the arcana of the profession. The text is largely a nonanalytical reference work almost encyclopedic in scope. The student is not likely to be confused by sticky diagrams dealing with the theory of the firm—there are none. There are six analytic diagrams in the entire text limited to demand and supply analysis. Price determination under monopoly is neatly handled with a nine-line quotation from the last edition of Kiekhofer's text. The student is further assured that economists for the most part would accept this statement as a concise and correct statement of monopoly price theory (p. 85). Q.E.D.

One wonders how meaningful the discussion of the incidence of taxation can be to the student when some 300 pages after his meager introduction to

marginal concepts he is told that: "If a business was maximizing profits before any tax, an income tax would not affect marginal cost or marginal revenue and thus would not affect the price-cost-output equilibrium" (p. 395). Indeed, economic analysis will remain a mystery if conclusions based on a "price-cost-output equilibrium" have not explicitly appeared previously in the text.

The materials on macroeconomics also suffer as a consequence of avoiding "analytical refinements." It is difficult to see why the authors find it desirable to distinguish among the consumption function, the "average consumption function" and the "marginal consumption function" in their abbreviated exploration of the determinants of aggregate income (p. 210), using numerical examples exclusively. College students, presumably, have been exposed to geometry in high school.

The book is organized along conventional lines: the first Part deals with the structure of the U.S. economy; Part II is concerned with prices, income and output; Part III deals with changes in the level of economic activity; Part IV describes the monetary-fiscal functions of government as well as problems related to international trade; Part V covers public policy related to economic stability and security; Part VI is concerned with public policy toward private associations and sectors of the economy; Part VII compares capitalist and socialist economics.

The book is well written and in some respects much too comprehensive for an introductory text. What the authors exclude in analytical economics they more than compensate for by extensive historical and descriptive coverage. One would perhaps wish that the reader might be spared the long leap between chapters describing specific sectors of the economy and later chapters discussing problems faced by these sectors and related public policy. Chapter 3, for example, describes the farm sector of the economy but the farm problem and public policy toward agriculture are not dealt with until the reader arrives at Chapters 41 and 42.

Junior college and perhaps advanced high school students may find this text a good introduction to the subject matter of economics.

LESTER BLUM

Colgate University

**Price and Allocation Theory; Income and Employment Theory;
Related Empirical Studies; History of Economic Thought**

Principles of Economics. By ALFRED MARSHALL. Ninth (Variorum) Edition with annotations by C. W. Guillebaud. London: Macmillan and Co. Ltd., for the Royal Economic Society, 1961. Vol. 1 (Text), Pp. xxxiv, 858; Vol. 2 (Notes), Pp. ix, 886. £6.00.

The first volume of this variorum edition of Marshall's *Principles* consists of the text of the eighth edition, reset in larger type yet retaining the original pagination which is substantially that which has existed since the fifth edition, with a number of misprints corrected, and with signs inserted referring to editorial notes in Volume 2.

In Volume 2 the aim of the editor has been: (1) "in the case of every paragraph or sentence in the eighth edition to indicate from which edition that paragraph or sentence originated"; (2) "to indicate any changes of substance which took place in any paragraph or sentence before it reached the final form in which it was carried in this eighth edition"; (3) "to reprint material which has appeared in any edition of the *Principles*, but which is not contained in the eighth edition"; (4) "to provide a new and more comprehensive index to the *Principles*"; (5) "to reprint articles written by Marshall to which he refers in the course of the eighth edition of the *Principles* and which have not been reprinted in the *Memorials of Alfred Marshall*"; also to reprint some other relevant writings of Marshall, including the "Plea for the Creation of a Curriculum in Economics and Associated Branches of Political Science" (circulated to members of the Senate of the University of Cambridge in 1902); and, finally, to print some previously unpublished letters (e.g., after the notes on Appendix F, Barter, are printed two letters from Marshall, and one from his friend Arthur Berry, to F. Y. Edgeworth with reference to his article in the *Giornale degli Economisti* of March 1891).

The complete separation of the text and the notes, and the unobtrusive character of the reference symbols in Volume 1 make for easy reading of that volume, rendering it very useful for those who want to read the *Principles* in its final form and who are not interested in the variant readings. Nevertheless, there is some disadvantage in having to turn to a second volume for the dating of every paragraph. I write sympathetically and doubtfully about this for I am now participating in the production of a variorum edition of John Stuart Mill's *Principles* (to be published, I hope, in 1963, by the University of Toronto Press). We face the same problem of how to produce a new edition which can be read for itself, and yet which provides a suitable apparatus for the scholar who wants to study the variant readings.

The instructions to reviewers sent by the editor of this *Review* include the following item: "It should be self-evident that a book should be accepted for review only if the reviewer is prepared to read the entire work carefully." It will be clear to anyone who has used this edition, and even more clear to anyone who has worked on the preparation of a variorum edition of any comparable work, that this instruction cannot be taken literally in the present case. All I could do is to sample. On the basis of such sampling I find ample justification for the view expressed by Guillebaud in his article on "The Variorum Edition" of Alfred Marshall's *Principles of Economics* in the *Economic Journal* (December 1961): "The impression I myself have gathered from working through and collating the different editions of the *Principles* is that changes which took place in them throw an instructive light on the development not so much of Marshall's thinking, as of the way in which he expressed his thought." In the "Editorial Introduction" to Volume 2, Guillebaud says: "Edgeworth, who reviewed the first edition in the *Academy* and the second and third in the *Economic Journal*, found nothing that he would single out as representing a new idea or change of doctrine. In general it may be said that Marshall's major economic theories and doctrines were already crystal-

lized in their final form, in content though not in expression, when he brought out his first edition." Because there was so little fundamental change and because the amount of change is nevertheless so great, it would have been very helpful if the editor had given us some clear indication of the significant changes. And it would have been particularly helpful to have these changes related to his other writings and to the writings of others.

In the sample that I have examined I found no omissions comparable to those referred to by G. J. Stigler in his excellent review article, "Marshall's *Principles* after Guillebaud," in the *Journal of Political Economy*, June 1962. One's confidence in the apparatus of variorum annotation is shaken by the examples there cited. But Stigler raises a more difficult question when he asks whether a variorum edition is useful, and whether an annotated edition would not have been more valuable. As I struggle with the variant readings of Mill's *Principles*, I am afflicted with similar doubts, and my examination of this edition of Marshall does not allay them. The more complete the apparatus of variant readings, the more danger there is that the real process of development of ideas may be hidden in the mass of detail. Having compared the full variorum annotation of Mill's *Principles* with the references to earlier editions given by W. J. Ashley in his edition of the *Principles*, I find myself wondering whether our new edition will be as useful to working economists as his. But, to return to Marshall, I think that this variorum edition is useful and that economists owe a debt of gratitude to Guillebaud for his years of work on it. I find it hard to think of an annotated edition that would not be so massive an encyclopaedia as to be quite unmanageable. There is so much to be thankful for in this edition that I do not think we should complain about the other things that might have been done.

The University of Toronto

V. W. BLADEN

Lectures on the Mathematical Method in Analytical Economics. Mathematics and Its Applications. Volume 1. By JACOB T. SCHWARTZ. New York: Gordon and Breach, 1961. Pp. xi, 282. \$14.50.

Contrary to the expectation induced by its title, the present volume is not a methodological inquiry into the use of mathematics in economic science. Rather, Schwartz presents some mathematical models of the Leontief variety, most of which are intended to elucidate the causes of the business cycle. Since the book is the outgrowth of the author's lectures at New York University, it is largely expository; yet his own contributions are not insignificant. A moderate level of mathematical competence is required of the reader (especially important is a familiarity with results on nonnegative matrices and with elementary topology), but Schwartz does a lucid job with the verbal interpretation of his mathematics.

The book consists of three parts: a discussion of the closed Leontief model (pp. 1-56); a theory of inventory cycles (pp. 57-178); and a discussion of a modified Walrasian system in the context of the existence of competitive equilibrium (pp. 179-278). These diverse topics are rather loosely and inef-

fectively linked by an input-output framework employed in each of them, on the one hand, and by the author's apparent view of himself as a defender of Keynesian doctrine, on the other.

In the first part Schwartz formulates the static Leontief system in terms of the price dual, and hence he is led to include a matrix of capital coefficients and a profit rate along with the coefficients of current inputs in the system of price equations. Each type of labor is viewed as a separate commodity with its own price and technology. These equations are solved for relative prices and the economy-wide rate of profit. After a neat review of some of the results on connected, nonnegative matrices, the author concludes with the familiar result: a necessary and sufficient condition for positive prices and rate of profit is that the dominant root of the current technology matrix is less than one (i.e., that the economy is viable in terms of current inputs). He also notes that the rate of proportional accumulation of stocks cannot exceed the solution value of the profit rate.

Far more interesting is the author's construction of a multisector model of the inventory cycle. Although most of his discussion deals with an aggregative version of the model (made possible by an assumption that initial output and inventory levels in the Leontief-like economy are proportional to the positive characteristic vector corresponding to the dominant root of the input matrix), Schwartz later generalizes some of his results to the case of an "unbalanced," multisector economy. The basic structure of the model is essentially an interindustry version of the original Metzler inventory theory [4]; whereas its dynamic motion has much in common with a trendless version of Hicks' *Trade Cycle* [2]. Schwartz gives the Metzler formulation nonlinear features by constraining inventories and output to be nonnegative and output to be feasible (as technologically determined by the carry-over of inventories from the previous period). These two constraints provide a floor and ceiling to output in each period.

By assuming that the economy-wide input-to-output and desired inventory-to-sales ratios are suitably large, Schwartz is able to conclude that the unconstrained analogue of his model has positive and unstable roots—i.e., the system explodes in a noncyclic fashion. Once actual output and desired output diverge due to an encounter with the ceiling (existing inventories are insufficient for sustaining the desired level of output), there may occur an indefinite "crawl along the ceiling" in the manner of the Matthews model [3], or a downturn as in the Hicks cycle and Nelson growth model [6]. The latter will prevail when the accumulation of inventories along the ceiling is sufficiently rapid to overtake the desired stock of inventories, and this will happen when the desired inventory-to-sales ratio is assigned a low value (but not so low that the noncyclic, explosive character of the unconstrained path is destroyed). The lower turning point is the result of persistent decumulation of stocks in the face of autonomous purchases which exceed a zero level of output—until desired inventories exceed the depleted stocks, at which point output shoots upward. Nowhere in the cycle does the stock of human beings limit output; full employment of labor, presumably, is never achieved. Fur-

thermore, nothing is said about the cyclical behavior of the rate of profit, to which the author devoted so much attention early in the book.

Although the instability of the model prevents its attainment, the equilibrium value of output in Schwartz's system is the familiar equilibrium solution of the matrix multiplier (see Chipman [1]). But the author does show that the Keynes Point (as he calls this solution) is the average value of output as the system proceeds along its limit cycle. In addition, he has a nice demonstration of the way in which the instability of the unconstrained system can be converted to stability by means of distributed lags in the formation of expectations as to future sales, a result closely resembling some recent work by Metzler [5].

Whereas output levels over time are the author's concern in the second part of the book, the last section presents a static, general equilibrium theory of prices. The existence—and at times, the optimality—of an equilibrium, rather than its stability, become the central issues. As a first approximation, fixed input coefficients of produced goods are retained, in which case the entire problem is resolved into a determination of the wage rate (and hence profit rate) in the labor market. The proof of existence is handled in much the same way for the more general case of variable input proportions. But with the aid of several empirical assumptions of the most casual sort (e.g., labor and capital are not very good substitutes anyhow), Schwartz uses the results of the fixed-coefficient model to make a rather ineffective argument for a general rise in wages as a cure for a contrived underemployment situation in which the labor supply function has a convenient (for the author) discontinuity. Although the formal analysis is up to the author's high standards, the incessant polemical tone of this section of the book is a significant deduction.

More stringent editing would have made a substantial improvement in the book—to use Henry Hazlitt as a whipping post in the rarified atmosphere of fixed-point theorems, nonnegative connected matrices, etc. is simply out of place. In addition, lengthy sections devoted to presentation (and a minimum of manipulation) of empirical data add nothing to the theoretical results. Admittedly, Schwartz claims only that these data put matters in the proper perspective, but they fail to achieve even that modest objective.

Finally, although Schwartz's central propositions in no way depend upon them, one can raise objections to certain of his arguments. For example, he assumes in his expository discussion of the Leontief system that capital items are not required in the "production" of labor, unlike the technological requirements of other commodities. But certainly houses and other consumer durables rather naturally fall into the category of labor-producing capital goods. (Of course "dummy" industries can be created to sell the services of these capital items to the labor sector, thereby effecting a formal elimination of capital from the production process in that sector; but this is not done for other commodities, and there seems to be no compelling reason for so doing with the labor sector.) By eliminating capital from the production of labor, Schwartz's assumption has the effect of forcing the return of capital in

labor to be zero—a rather disturbing result, one would suppose, for the sizable number of economists currently investigating the return to investment in human beings.

In much the same spirit, Schwartz assumes that human capital is not required in the production of any commodity, human or nonhuman. Although this is also a matter of choice between stock and flow approaches to production, it is convenient in certain instances to view a human being as a capital item—e.g., in those circumstances where “retainers” are paid.

From his later exposition one infers that Schwartz’s reason for these assumptions is to preserve the simple form of the matrix of capital coefficients in a derived model in which a prior solution for labor inputs eliminates their explicit appearance. But nowhere in his later analysis of the labor-eliminated model is the simplified capital matrix critical for his results. In brief, the assumptions unnecessarily restrict the situations to which his model might apply.

But these are minor imperfections in an otherwise worth-while book, and it deserves the attention of those economists with some mathematical training. Although it is unlikely to become a significant landmark of mathematical economics, the present volume indicates that this series of monographs of which it is the first will be of use to economists.

DONALD V. T. BEAR

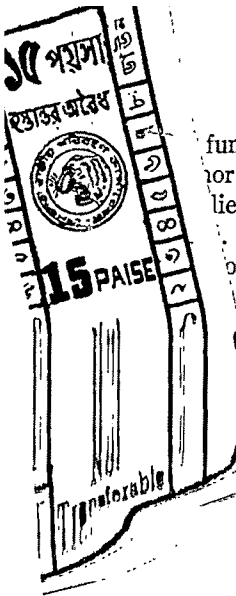
University of Chicago

REFERENCES

1. J. S. CHIPMAN, “The Multi-Sector Multiplier,” *Econometrica*, Oct. 1950, 18, 355-74.
2. J. R. HICKS, *Contribution to the Theory of the Trade Cycle*. Oxford 1950.
3. R. C. O. MATTHEWS, “A Note on Crawling Along the Ceiling,” *Rev. Econ. Stud.*, Oct. 1959, 27, 10-15.
4. L. A. METZLER, “The Nature and Stability of Inventory Cycles,” *Rev. Econ. Stat.*, Aug. 1941, 23, 113-29.
5. ———, “Partial Adjustment and the Stability of Inventory Cycles,” a paper to be presented to the 1962 Joint European Conference of the Institute of Mathematical Statistics, Institute of Management Sciences, and the Econometric Society.
6. R. R. NELSON, “A Note on Stability and the Behavior Assumptions of Harrod-type Models,” *Econ. Jour.*, June 1961, 71, 335-49.

Preistheorie. By WILHELM KRELLE. Zürich: Polygraphischer Verlag; Tübingen: J. C. B. Mohr (Paul Siebeck), 1961. Pp. xxiv, 732. DM 63; paper, DM 56.

In the first part of this book, the author summarizes contemporary price and market theory, including the derivation of demand and production functions. This as it were sets the stage—the economic background for the individual firm’s maximizing activities. The rest of the book is concerned with the para-



functions which describe rational firm behavior. In the final chapter shows—or attempts to show—how the maximizing equations lied in practice, “as soon as the necessary underlying data can . . .” (p. 629).

of the book is then the individual firm and its decisions; and theory as such or problems of general equilibrium. There is much of more general theoretical interest, including particularly concept of a limit or threshold of sensitivity (to the effects of price and other variables), his theory of negotiations, and his dealing with risk and uncertainty. Throughout, the author first subject verbally together with diagrams in the text, and replete with appendices, attached to the individual sections of the text, including more abstruse mathematical analysis, and criticism of various approaches and solutions.

the firm as such, Krelle follows the order: monopoly, duopoly, then—although “a text book of price theory is no cook book of the situation” (pp. 195, 245)—bilateral monopoly and “more complex relationships.” For each of the major market forms, he discusses possible goals: profit maximization; sales maximization with perfect competition and profit maximization with a minimum of sales; and distribution between classical and “Leontief” production functions. He discusses maximizing functions with certainty, including in the cases of lack of knowledge of rivals’ reactions, the author brings in uncertainty considerations. In connection with uncertainty, he distinguishes situations of known and unknown probabilities, and also distinguishes—once for all—decisions under uncertainty.

Next is the author’s analysis of duopoly—and by implication of bilateral monopoly—with “incomplete mobility” of demand, that is, non-homogeneous products. The essence of the situation is the (correct) anticipation of the duopolists that the rivals will react in asymmetric patterns to upward and downward price revisions. This is of course the “kinked” oligopoly demand curve; but Krelle, by bringing in the fact of heterogeneous products, demonstrates the existence in most circumstances of an *area* of possible stable equilibria (more or less rigid prices) so long as competition is “peaceful.” The particular solutions (arrays of prices of the rivals) depend on historical and also psychological (subjective) factors. In this section, the author points out that other theories of duopoly-oligopoly—from Cournot to Stackelberg—assume “more or less significant errors of one or both rivals with respect to the reciprocal reaction . . .” (p. 350), and also in some instances stubborn refusal to revise patterns of conduct in the face of continued disappointment when rivals do not react as anticipated.

Krelle’s own solutions are based on “full insight” into market conditions, including in the first approach, correct evaluation of reactions (strategies) of rivals or, in the cases of bilateral monopoly, market opposites. Thus the author, in his approaches, rules out bluff, deception, error, and uncertainty. With respect to bilateral monopoly, the author demonstrates that—with full

knowledge on the part of the two monopolists—there is no problem of quantity, but only of price. That is, what is involved is the division of the monopolistic spoils (contrast the theory of countervailing powers). Incidentally, in an aside to his "Practical Rules for Negotiations," Krelle brands bilateral monopoly as "so to speak . . . an immoral institution" because "it places an overly high premium on deception of the opposite side" (p. 452).

The author in all these situations brings in uncertainty with respect to rivals' strategies and also "nonpeaceful" strategies, after reaching solutions based on correct knowledge of rivals' reaction parameters and "peaceful" intentions. His use of graphic illustration is ingenious, in particular, iso-profit contours with the two variables being the prices of the two firms. Of interest also is his use of the concept of "economic horizons" (of individual firms) in connection with economic warfare, and his theory of (rational) negotiation.

The book—as is evident from the foregoing—is addressed particularly to the practicing economist who, in employment of the firm, will attempt—with the aid of electronic and even "superelectronic" equipment—to apply the theories, that is the maximizing equations, to solve the complicated problems of optimal firm "programming." Your reviewer, because of inadequate mathematical background, is unable to evaluate the specific mathematical procedures and examples, whereby the solutions of the earlier chapters are transformed into hypothetical production and pricing programs. Two aspects of the procedures however seem relevant: first, the "very wearisome" (p. 660) burdens of solution even with electronic equipment; and second, the difficulty of obtaining or estimating the parameters and functional relationships with which the equations are to be given substance. "Such exact data" are in fact "naturally not to be anticipated," either in the oligopolistic example given by the author (p. 714n.) or in many other instances.

The fact, however, of the author's *possibly* exaggerated hopes for practical application of complicated formulae to business problems, and his primary interest in business-firm behavior do not lessen the book's interest for the theoretical, and also for the governmental, economist. The former can profit in particular by the cogent criticisms of contemporary price and firm theory, as well as the several original contributions to theory and methodology. Altogether this book marks a milestone in the economic analysis of decision-making, and in the implications for entrepreneurial behavior of the theories of markets, of risk and uncertainty, and of negotiations.

C. W. EFROYMSON

Butler University

Economic History; Economic Development; National Economies

American and British Technology in the Nineteenth Century: The Search for Labour-Saving Inventions. By H. J. HABAKKUK. New York: Cambridge University Press, 1962. Pp. 222. \$6.00.

In this book one of England's leading economic historians, H. J. Habakkuk, Fellow of All Souls and Chichele Professor of Economic History in Ox-

ford, uses economic theory with considerable sophistication to speculate on why the level of labor productivity and the rates of invention and technical progress in manufacturing were greater in the United States than in Britain from Waterloo to the First World War. He suggests that "economic," not "sociological," factors lay at the root. Sociological differences, insofar as they existed, arose from economic differences.

The author argues that America's high wage rates, made necessary by high farm earnings, created an incentive to develop and use capital-intensive techniques. The dispersion of population, moreover, made the industrial labor supply inelastic in expansion. Hence, "shortages" of labor when investment was high constituted an added stimulus. The author argues further that before the onset of heavy immigration in the 1840's and 1850's, unskilled labor was relatively scarcer in the United States than in Britain. In consequence complex machines made with skilled labor had a comparative advantage in the United States; and this, particularly when skilled labor was needed to operate such machines, fostered mechanization here. After immigration augmented the supply of unskilled labor, America benefited from skilled-labor-saving technology originating largely abroad, while high wages continued to provide a general inducement to mechanize. The saving of skilled labor in the post-Civil War period was further stimulated by the growing belligerence of unionized skilled workers. By contrast, British industry could draw upon a large reserve army of underemployed ruralists at low wages until about 1870, and therefore lacked the same incentive to develop or use capital-intensive methods. (Eighteenth century Britain, however, before the big surge of population growth and the late enclosures, confronted a shortage of industrial labor and responded with a spate of labor-saving inventions as did America in the following century.)

While high relative wages ordinarily depress total investment, the high rate of growth of the U.S. economy as a whole, reflecting the building up of the country, Habakkuk contends, assured a high rate of investment here. In addition to the presumably overriding stimulus to investment provided by growth, the author suggests that the depressing effects of high wages on investment were partly offset by the need which such wages imposed for greater efficiency, by the superior qualifications and longer working hours of U.S. workers, their greater receptivity to technical change (arising from labor scarcity), and a higher entrepreneurial propensity to save induced by the use of capital-intensive techniques. Still another factor favorable to investment which Habakkuk stresses was monopsonistic and monopolistic profits in manufacturing made possible by the local and regional character of many U.S. labor and product markets.

In Britain, on the other hand, after 1870 wasteful entrepreneurial practices and labor hostility to labor-saving techniques—attitudes originally engendered by low-cost, abundant labor—continued through force of habit after the economic conditions which gave rise to them had abated. Toward the end of the century Britain's industrial growth was, moreover, retarded by the declining magnitude of the rural-urban shift, and by the rise of industry abroad, particularly in Germany and the United States.

While one might expect that low labor costs would induce labor-saving invention and innovation, and to some extent did so, Habakkuk argues, the possibilities for such improvement were few in the case of labor-saving. Natural resources are usually more heterogeneous than labor, he suggests, so that techniques which save them generally have only a narrow application. Moreover, since natural resources constitute a smaller part of total costs than labor, profits from natural-resource-saving inventions will not be great. Further, the possibilities for improvement are greater at the labor-intensive end than at the capital-intensive end of the spectrum of techniques, because, Habakkuk contends, mankind has had longer experience with the former than with the latter. In the light of all these considerations, he argues that if Britain's nineteenth century entrepreneurs were inferior to those of the United States and Germany, it was because the British industry offered inferior opportunities to men of high talent; in Britain, economic—or at least nonmanufacturing—employments secured a larger share of the nation's talent in England than in the United States or Germany.

Taken on its own terms as a speculative foray into a complex subject, Habakkuk's book is a valuable and stimulating contribution. It illustrates how the study of economic history can be enriched by the intelligent application of economic theory; it suggests the possible existence of interdependencies which are disregarded in theoretical analyses; and it raises significant questions for further research. Some of these may be indicated briefly here. First, as Habakkuk fails to recognize the possibility that in many U.S. industries, labor costs per unit of output may have been lower than in Britain for the same technique. Thus Habakkuk frequently notes that, compared with British workers, U.S. workers were better educated, stronger, healthier, more productive, and worked longer hours, had a higher average level of skill, and not only did not shirk but often actively sought improved techniques; it may be, as Leontief has argued in another context, that measured in efficiency-units U.S. labor was cheap, not dear. If this is the case, and the condition was general, the basis of Habakkuk's argument which rests on high wages falls to the ground. What is relevant is labor costs per unit of output, not labor costs per worker. Likewise, the author's contention that the possibilities for improvement are greater at the capital-intensive end of the spectrum, if true, become of less practical relevance. The distinction between "sociological" and "economic" determinants also needs clarifying, a need highlighted by Habakkuk's (unavoidable) oversimplification of regarding as a sociological variable genetic differences in inventive ability. Similarly, the "perverse elasticity of credit" in the Federal Reserve Bank era suggests that in booms, capital may have been at least as scarce as labor. (Incidentally, some readers are bound to be puzzled by his frequent use of "shortage," a term which he does not define.)

Once the various possible factors have been identified, assigning relative weights to them is the next problem. For example, while it is true that economic conditions fostered a more rapid rate of inventive and technical progress in the United States than in Britain, most of this difference could still be the result of "sociological" factors. It is not enough to show that observed economic differences between the two countries

produce differences in invention and productivity *in the same direction* as those observed. It is also important to know whether they produced differences of the same magnitude. This question cries for an answer when U.S. economic history is compared with that of other regions settled at more or less the same time but by men who brought with them a radically different ethos. To put the matter somewhat differently, were those distinctive, progress-oriented American traits which perceptive observers so frequently noted in the eighteenth and nineteenth centuries merely a product of factor proportions, or were they mainly a consequence of the selective character of American immigration?

The book is slightly marred by occasional minor theoretical errors, as, for example, on page 14 where the author suggests that high farm earnings forced U.S. manufacturers to pay the marginal worker more than the value of his marginal product; or in a note on page 38 where he assumes that his analysis is inconsistent with the assumption that returns to U.S. agriculture were usually below those to industry. (Imperfections aside, average returns on capital, sunk costs included, could have been lower in the former than in the latter while returns on new investment were the same.) The footnotes and textual evidence are of considerable independent interest. The index is inadequate.

JACOB SCHMOOKLER

University of Minnesota

The Industrial Revolution in Europe, 1815-1914. By W. O. HENDERSON.
Chicago: Quadrangle Books, 1961. Pp. ix, 288; maps. \$6.00.

The term "industrial revolution," having undergone successive inflations and deflations, has in recent years taken on a generally accepted and fairly specific meaning when used by economic historians. It has come to refer to a period of marked acceleration in the rate of economic growth, accompanied by industrialization and pervasive changes in the character and tempo of economic life, which ushers in an era wherein the rate of growth is sustained at levels appreciably higher than those hitherto enjoyed. Henderson's study of France, Germany, and Russia is not clearly reconciled to adopting this concept, with its emphasis upon discontinuity and pervasive change, in preference to a more liberal use of the term which would apply it both to the mechanization of manufacturing activities and to a hundred-year epoch in economic experience.

A full treatment of the economic development of three major European countries during the period 1815-1914 could not reasonably be attempted in a book of these modest dimensions. On the other hand, a group of intensive studies, confined to analysis of the periods of acceleration, or a comparative examination of selected aspects of the industrial development of the three countries, structured around one or more major hypotheses, suggest themselves as feasible and worthwhile ventures. Henderson's opening chapter seems to hint that something of this order is in store for the reader. But it is just a hint. In place of a set of hypotheses which can fruitfully be subjected to a

fresh examination we are presented with an incomplete account of Rostow's "stages" and a surprisingly inadequate summary of W. Hoffman's research on patterns of structural change in industrial economies—surprising, since Henderson was co-translator of Hoffman's work. Moreover, for better or worse, nothing is heard of Rostow's or Hoffman's theses in the pages that follow.

Instead, the body of the book is divided in three parts: half the volume being devoted to France, with Germany and Russia sharing the balance in the ratio of 3 to 2. The parts are virtually unrelated and contain straightforward accounts of developments in the fields of industry and transportation between 1815 and 1914, through which bits of condensed political, working-class, and colonial history are interspersed—some of them being only tenuously connected to the announced central theme of industrialization.

For the most part, Henderson is content to describe, rather than search for any underlying logic in a given procession of events. Describe he does. The reader is offered a narrative laden with details whose significance for industrialization generally remains unexamined, and on occasion would not bear such examination. Of what import is it that the quay built at Bordeaux in 1856 was 700 meters in length, or that Yermak led 800 men against the khanate of Sibir in 1574, or that the firm of Woermann "traded successfully" in the Cameroons and Gaboon? Yet, midst all this raw empiricism, nowhere can the reader find any systematic, convenient presentation of available quantitative information. The pages are sown with industrial output, labor force, and other statistics (real national income is mentioned once in a footnote) by the broadcast method. Anyone wanting a rate of growth will have to search out the components, worry about comparability, and compute it himself. Those seeking the sources of the data given will be disappointed, for the work is entirely without annotation. The latter is particularly distressing when it is left unclear whether the numerous unidentified quotations are in fact direct quotes or translations. A selective bibliography is supplied, but since it is confined to English-language publications it must perforce omit all primary sources.

As an approach to the study of industrialization on the Continent, the book suffers from even more serious defects. Henderson's treatment seems to imply that preindustrial conditions in different regions of Europe had little influence in shaping the course of subsequent developments; and it is precisely his failure to fully examine the preindustrial economies of the countries involved which effectively removes any means of evaluating the relative significance of members of the traditional array of factors listed as contributing to industrialization, or, for that matter, of understanding why the process of industrialization differed among countries in timing, speed, and resulting economic and institutional structure. Indeed, by stressing the role of British entrepreneurs on the Continent—a field in which his scholarly contributions are well known—Henderson at times seems to further suggest the view that the "industrial revolution" started in England and was literally spread abroad. But just as no attempt is made to account for the greater role played in Russia than in France by government, or for the difference between the functions assumed by banking institutions in the course of German and Rus-

sian industrialization, we are left to wonder why, for example, Englishmen were able to do so much for early industry in Upper Silesia and so little in France.

It is symptomatic of the general glossing of the problems confronting pre-industrial Europe that Henderson's only apparent device for limiting the scope of the work consists in neglecting the agricultural sector. Arthur Young's comments on the progressive aspects of some farms are taken to suffice as a portrayal of the French agrarian situation in the latter part of the 18th century—which may be why the dominant position of small peasant proprietors in 19th century French agriculture is ascribed, *en passant*, to the revolutionary reforms of 1789-93. The question of agrarian reform in Prussia is barely alluded to, and all told, roughly one page is devoted to the emancipation of the serfs in Russia and one paragraph to Stolypin's reforms. It is therefore perhaps not surprising that the difficulties encountered in the recruitment of industrial labor in Russia after 1861 are not assigned in any part to the restraints placed by the *mir* on the permanent transfer of peasant out of agriculture, but rather are put down to the fact that peasants found industrial employment "uncongenial" and factory discipline "irksome."

The shifts in interest, changes in concept, and the progress of research during the 40 years since the appearance of J. H. Clapham's *Economic Development of France and Germany* all cry out for a synthetic re-examination of Continental industrialization which can take a place alongside that classic work. Unfortunately, it is a plea that goes unanswered in this volume.

P. A. DAVID

Stanford University

The Rate and Direction of Inventive Activity: Economic and Social Factors.

A Conference of the Universities-National Bureau Committee for Economic Research and the Committee on Economic Growth of the Social Science Research Council. NBER Special Conference Series No. 13. Princeton: Princeton University Press for National Bureau of Economic Research, 1962. Pp. xi, 635. \$12.50.

These 23 papers, originally prepared for a conference at the University of Minnesota held in May 1960, form a collective attempt to domesticate that coarse, exogenous variable, technological change. Armed with National Science Foundation and Patent Office statistics, case studies, patriarchal and up-to-the-minute economic concepts, and aided by psychologists, sociologists, and historians of science, the participants report much progress and hint of more to come.

Yet, according to most of the authors and practically all discussants, many quandaries remain. Prominent among these is the problem of defining terms and staking out a manageable field of inquiry. After some soul-searching, Kuznets accepts the conventional triple categories of scientific research, invention, and improvement, which correspond roughly to the current usage of basic research, applied research, and development. To him the middle category, defined as the combining of "existing knowledge in devices potentially useful in economic production and resulting from a mental performance above

the average" (p. 24), is sufficiently distinct to warrant nineteen pages exploring its measurability. But only a half dozen of the other papers are that narrowly focused. Most cover the entire spectrum of activities preceding the first commercial or military use of a new commodity or process. And the conference was the better for it.

Those authors who agree with Kuznets in finding inventive activity, narrowly defined, a useful concept, do so partly because the patent system, like a customs house, generates statistics at a more or less arbitrary frontier. In this class are Thompson's paper showing a correlation of patents granted with urbanization and industrial structure and MacKinnon's demonstration that mediocre independent inventors have different psychological profiles from patent-holding mediocre corporate research workers.

The patent system itself is the subject of Markham's review of the way in which a more vigorous antitrust policy since the 1930's has weakened both protection and abuse. Commenting on Peck's case-study of postwar aluminum manufacturing inventions, Enos' study of petroleum refining, and Mueller's tracing of the origin of inventions underlying DuPont innovations, Arrow notes that patent royalties were trivial, so low that exploiting the inventions of others was not appreciably less profitable than exploiting one's own. The explanation presumably lies in the prevalence of monopsony and oligopsony or in the high cost of development which leaves little profit to squeeze. The conflicting implications of these references to market structure, as well as data about the 100 largest employers of research and development personnel since 1927, presented by Worley, are not resolved. On the contrary, Griliches concludes that there is no particular relation between market structure and inventive activity and that the subject has already received too much attention.

All of these points, however, weaken belief that patent statistics will ever prove as good in analyzing current fluctuations in technological advance as Schmookler finds them for the century before 1930. Sanders, Gilfillan, and Schmookler confirm that they have yet to be proven a valuable index of the secular trend. And when Schmookler finally reports that nowadays inventions in patentable form generally come from the development phase while central ideas come from basic research (p. 45), the notion of inventive activity as the contriving of things patentable must be seen as a research tool with a dull edge.

Little agreement exists about the manner in which the creation of technological knowledge should henceforth be subdivided. Schmookler finds that much applied research, far from being product- or process-specific, is really "basic" in the sense of illuminating whole classes of natural and industrial phenomena. "Pure research" would be practically indistinguishable from such activities, but being primarily motivated by the desire for knowledge, it would be an exogenous variable in economic development. Robert Merrill suggests the distinctions of "technically justified science" and "exploratory science-invention" as serviceable (p. 417). Merrill follows this classification with a deft analysis of pulls on the direction of research by nonmarket fac-

tors in academic science, engineering, and medicine, and in government agricultural research.

To some authors putting the acquisition of knowledge into the "economic cosmogony," as Siegel puts it, needs but a dab of analytical improvisation: knowledge, like any other commodity, must be extracted, processed, stored, maintained, and distributed. The first part of Machlup's account of the supply of inventors and inventions fits the supply of trappers and pelt just as well. Brozen sees research and development expenditures increasing at a decreasing rate as underinvestment is eliminated in high-research high-return industries, and equilibrium is approached. With a ritually correct multiple regression analysis of eighteen chemical and five drug manufacturers, Minasian shows that during 1947-57 research and development led to higher productivity and most likely, profitability. A minor difficulty conceded by Minasian is that the higher productivity measure of these firms may partly reflect their monopolistic achievements. Mansfield's calculations, moreover, indicate that in certain (perhaps the same?) chemical companies research and development expenditures are partly a function of expected sales, which could un-hinge Minasian's conclusion a bit more.

Two of the complications stressed by Arrow, external economies in production and the negligible social cost of using knowledge, need no methodological pioneering. In the presence of increasing returns, trying to avoid underproduction of knowledge through greater appropriability (a stronger patent system) means underutilization in both research and application. Machlup, however, thinks underproduction may be overstressed. In a few incisive pages (pp. 157-67) he suggests that in a given period the stock of knowledge and the problems to be solved are like fixed factors of production to which variable factors cannot be applied indefinitely without diminishing returns. Moreover, the problem-solving results of one period may conceivably more than offset concurrent problem-raising and knowledge-increasing effects in setting the agenda (the fixed factors) for the next period.

Fellner, similarly, finds that his usual economic tools can handle the problem of whether knowledge acquisition responds to factor scarcities. It will not, as long as factors are hired in pure competition but may under the "quasi-monopsonistic" conditions which are "less rare than is commonly believed" (p. 183). But as Nelson points out in his skillful introduction, Fellner's analysis implies that research directors can predict what kinds of production functions lie ahead. The papers by Rubenstein and Cherington indicate that neither in the large, decentralized firm nor in a government department is research pursued with the hope of such a high order of predictability.

On the contrary, seeking knowledge is almost synonymous with removing uncertainty. The management of uncertainty must be central to the economics of research: who will inquire if uncertainty is not aroused first? Four papers by Marshall and Meckling, Klein, Marschak, and Nelson (all associated with the RAND Corporation at the time) turn to this problem. They look "deeply at the insides of the black box—at the R and D process itself." Two examine weapons research for the Air Force, and two look at Bell Tele-

phone Laboratories operations, the development of a microwave relay communications system and the invention of the transistor. Surprising inferences and remarkable observations flow abundantly out of the black box. Uncertainties are great but indivisibilities in learning are not; hence "very modest expenditures can buy a considerable amount of information," and optimum resource allocation in research means parallel efforts reduced according to "sequential strategy" with no aim at a "predetermined optimal point" (Klein, pp. 488-96).

When one finds economists discussing decision strategy for handling information under conditions of uncertainty, one momentarily wonders whether the science of knowledge acquisition is not domesticating economics, instead of the reverse. But perhaps, as in a marriage, who is domesticating whom depends on which partner one asks.

With 23 papers at hand, I have not mentioned the salient points of most, nor the minor flaws of some. But final compliments are in order for the editors who were clearly uninhibited in removing duplicate coverage and unneeded comments, while allowing prepared and inspired discussants full swing.

W. PAUL STRASSMANN

Michigan State University

Factors in Economic Development. By A. K. CAIRNCROSS. London: George Allen & Unwin Ltd., 1962. Pp. 346. 35 s.

Economic Development in Perspective. By JOHN K. GALBRAITH. Cambridge: Harvard University Press, 1962. Pp. vi, 74. \$2.50.

These books are of particular interest as a reflection of a change in the mood of development thought. Until recently it would have been exceptional to question the importance of capital accumulation, the contribution of foreign aid, the value of industrialization, or the need for development planning. Now, however, a reaction has set in against the earlier orthodoxy. Both of these books support this reaction by arguing against a too easy interpretation of the development task.

Cairncross' volume is a collection of "essays, guesses and addresses," most of which have been published previously but are not readily accessible. Though wide-ranging and varied in approach, the score of articles and essays relate to three basic topics: investment and technical progress, international trade and development, and administration and planning. He wisely shies away from any one systematic theory of economic development or any specific strategy that might be followed by governments trying to force the pace of development. Instead, in a more fundamental fashion, he reminds us—by the very multiplicity of the factors that he considers—of the many facets to economic development, the variety of possible approaches to it, and the complexity of the elements by which it is governed. All this is sound economic reasoning placed in the widest context; it provides a healthy antidote to much of the development literature of earlier years which oversimplified the process of development and treated it as a mechanical or merely quantitative affair. From this volume, one will acquire no new gadgets of analysis, the latest elements of expertise, or simple recipes for development,

but he will more readily appreciate that the accelerated development of an economy cannot be separated from the development of a people and the development of a society—that the process is qualitative, involving changes in techniques, attitudes, and institutions.

In several basic chapters that assess the contribution of capital accumulation, Cairncross makes a strong case against the common view that capital exercises a predominant influence on development. He puts most emphasis on innovation in its widest sense, and argues the need to study far more attentively the social and economic forces to which innovation responds: not just scientific research but the incentives to seek out and employ new knowledge at the risk of loss. A major consideration is that technical progress operates largely in independence of capital accumulation and that capital is needed, not in order to allow innovations to be made but in order to consolidate the improvement in income that innovation brings about. The experiences of development planning in practice tend to confirm Cairncross' conclusions that, on the whole, there is a greater danger that the importance of capital in relation to economic progress will be exaggerated than that it will be underrated.

The chapters on the influence of international trade on development are also especially noteworthy. In examining patterns of trade and development, Cairncross provides several penetrating arguments against the extreme view, such as Myrdal's, that international trade operates as a mechanism of international inequality, and also against the more moderate view, such as Nurkse's,⁶ that the nineteenth century "engine of growth" through foreign trade cannot now operate sufficiently powerfully to allow primary producing countries to make full use of their expanding resources without a special effort to develop their domestic markets. Against such a pessimistic attitude, Cairncross emphasizes the importance and the uniqueness of the contribution that foreign trade can make to economic development.

The only disappointing section of the book is that on administration and planning. Although this part contains an illuminating discussion of the role of an economic adviser and an analysis of the uses and abuses of production programs, it may appear rather old-fashioned to the practitioner of development programming. It touches only tangentially on the major problems involved in delimiting the scope of a development plan and using the techniques of development programming.

Notwithstanding the failure to come to grips with the central issues of development planning, the discussion throughout this book is of the highest quality. Few books can approach it for clarity, moderation, and balance in analyzing the fundamental factors in economic development.

Gailbrath's book is thin reading for the academic economist, but it is nonetheless of considerable interest because of the author's position and the fact that the contents were originally presented in five public lectures in India. Comments are offered on the experience of the past decade of development, the theory of development planning, the role of education as an investment, and the use of the corporation as the principal instrument of industrial production.

At the outset, Galbraith criticizes the current discussion of economic development for mistaking parts of the problem for the whole. As a result, he submits that "we have probably wasted a good deal of time and effort doing things which were right in themselves but which made little or no contribution to progress because they were done in an environment which was inconsistent with advance" (pp. 5-6).

From this standpoint, Galbraith presents his major thesis: capital and technical knowledge are of only secondary significance compared with the primary requirements of effective government, education, and social justice. It is the lack of these that is of critical importance as a limit to advance in many countries, and until these barriers are removed little will come from capital investment and technical assistance. "While plans may be big on paper they will be small in result" (p. 10).

It follows, according to Galbraith, that in the early stages of development it is inappropriate to engage in detailed planning of investment; instead, the prior task is to lay the administrative, social, and educational groundwork for advance. It is acknowledged that India has had sufficient advancement so that capital and technical knowledge have become limiting factors, and India does have the capacity to engage in the complex planning of investment allocation. There is, however, the distinct possibility that capital provided to other countries that are not in such a relatively sophisticated stage of development will be wasted. We are warned that "we could make no more serious mistake than to imagine that the kind of planning that is done by India or Pakistan is essential for nations in all stages of development. In earlier stages it is neither necessary nor possible" (p. 16).

What Galbraith has to say may not be what the developing countries would like to hear, and it may be criticized as being too much a counsel of perfection. But many of his observations should be salutary in countering the tendency for poor countries to borrow at too high a level and to engage prematurely in comprehensive planning.

GERALD M. MEIER

Wesleyan University

Économie du développement. By ELIAS GANNAGÉ. Paris: Presses Universitaires de France, 1962. Pp. xi, 352. NF 24.

Professor Gannagé's study of economic development is a synthesis of both English and French contributions to the theoretical side of the subject. It is intended as a text for French-speaking university students. It provides an accurate, well-organized review of the field. Its major limitation is that it mirrors rather than resolves the basic contradictions in development theory, clinging by one set of fingertips to principles of allocative efficiency in a context of scarce inputs while trying with the other hand to build a case for the most Hirschmanesque methods of activating presumably plentiful latent resources.

The three sections of the book treat respectively the nature of underdevelopment, "vicious circles," and possible routes to development. The first section summarizes the main qualitative characteristics of underdevelopment

familiar in the literature, presents a minimum of statistical data accompanied by a case against reliance on any quantitative approach, and offers a careful definition in terms of structural dualism. The method enables the author to stress his fundamental distinction between "growth" as measured by statistical data and "development" in the sense of transformation of economic and social structures toward change and flexibility.

The section titled "Vicious Circles" draws its basic ideas from Nurkse but amends and clarifies Nurkse's suggestions most successfully. Gannagé's circles concern population pressure, capital and saving, income distribution, and international trade. The discussion of capital is oriented to a conclusion that the problem of stimulating investment demand is much more important than any concern with the adequacy of saving. With respect to arguments in favor of concentration of income to encourage saving he is, consistently with the preceding, highly reserved. He argues that inequality in underdeveloped countries is often linked to special privileges of social groups with little interest in productive investment, and that extreme inequality provokes both social tension and recourse to authoritarian controls. The discussion of international trade leaves room for almost any conclusion one prefers: frequent references to the desirability of protection to encourage domestic investment are approximately balanced by recognition that trade stimulates new ideas, provides an escape from Nurkse's problem of narrow markets, and may help induce structural change.

The final section on routes to development is very close to Hirschman. It is singularly lacking in the organized critical assessment applied in the preceding sections. The author's stress on promoting action rather than on economizing scarce resources leads him to argue in favor of machine-oriented capital-intensive techniques even in conditions of surplus labor, to reject the criterion of marginal social benefit in project assessment, and in general to propose that investment programs be designed in terms of the degree of disequilibrium they will create instead of the income they may directly produce. Hirschman's glittering insights are faithfully transmitted, without the limiting principles they so urgently require. The author's conclusion that efficient resource allocation is in any case less important than rapid structural adjustment is surely defensible, but the point serves as an escape hatch rather than a resolution.

For the French-speaking students for whom this book is intended, it provides a good review of a confused field. For those to whom English is accessible, its main interest may be that it provides a fine opportunity to examine the "structural" approach dominant in French studies of development.

JOHN SHEAHAN

Williams College

The National Income of Communist China. By ALEXANDER ECKSTEIN, Y. C. YIN, AND HELEN YIN. New York: Free Press of Glencoe, 1961. Pp. 215. \$6.75.

As economic studies on Communist China have become somewhat more fashionable in this country since the officially much vaunted "Great Leap"

of the Chinese economy in 1958, an increasing—but still woe—flow of literature in this field may now be expected even though the “Great Leap” itself has by now proved to be partly illusory and has been followed by a “Great Slide.” The present research monograph is an interlimited addition to this flow.

Apart from two introductory chapters, which provide the methodological setting, the main body of this volume consists of a chapter on the sectoral and aggregative estimates of Communist China income in 1952 and another chapter on the economic implications of these estimates, including very brief discussions on such topics as the use of resources, international comparisons, and problems of valuing such comparisons. Thus, while the title of the monograph gives the impression that it is a discussion of China's national income for a period of years, the substance is actually restricted to the year 1952. Consequently, one cannot expect to derive from this study any basis for a prediction on the prospects of Communist China. Nor is there any attempt to discuss the genesis and débâcle of the “Great Leap” which points to the “discontinuities” in Chinese economic development. Nevertheless, the reader may find the estimates for the year 1952 interesting reading, especially in comparison with estimates by William Hollister, T. C. Liu, and others.

One wonders whether it is really possible to limit treatment to the year 1952 without a much more substantial discussion of the historical background before and after 1952. It is unfortunate that, in the face of the rapidly changing situation in China, the author did not have information on the situation since 1959, which would have altered his brief description of the development. It is also a moot question whether the sacrifice in time span covered has been adequately compensated by the firmness of the Chinese economic structure on which attention is supposedly focused.

A number of detailed questions may also be raised. For instance, the 1952 crop production data are accepted without any serious question of their possible undervaluation; the structure of wages is assumed to be more “rational” than that of other factor prices without a more detailed discussion of the matter; discussion on such topics as the cost of living, overseas remittances, and many others is painfully brief. Within the minor points, it would seem that the author has found it difficult to make an exceedingly large number of assumptions, some of which are less arbitrary and sweeping than those other students, whom he criticizes, have had to make. This is almost inevitable in view of the scanty knowledge about the Chinese economy, but it would be wise for us to bear the point in mind if allowances are to be made.

Three points which emerge from the study offer the interesting general topics for challenging research: (1) shift of the base year for the Chinese economy of the pre-plan period from 1952 to perhaps an average of 1952-54, in view of the contention that the implementation of the first five-year plan as a national plan began only in 1953; (2) evaluation of the Chinese national product by adopting the criterion of final power as a measure of the final product; and (3) at a c

the construction of sectoral conversion rates between the *yuan* and other currencies for such sectors as consumers' goods, producers' goods, manufactures, etc. Eckstein hinted at the first two points, but did not follow through, while preliminary conversion rates for the agricultural sector only were constructed in one of the appendices. These are interesting problems which deserve much more intensive investigation.

YUAN-LI WU

University of San Francisco

The Soviet Economy: Structure, Principles, Problems. By NICOLAS SPULBER. New York: W. W. Norton and Co., Inc., 1962. Pp. xiii, 311. \$5.95.

This book is a concise discussion of the main features of the Soviet economic system which focuses on the principles and operation of the Soviet "model" of central planning. The treatment is analytical, rather than descriptive, and draws upon and summarizes principal recent literature on the various aspects of the Soviet economy. Because of its approach and its relatively short length, the book is suitable for courses in comparative economic systems as well as for courses in Soviet economics. Students with good preparation in economics will find it on the whole challenging but not unduly difficult. Teachers who are not specialists on the Soviet economy will undoubtedly learn from the book themselves.

The 15 chapters of the book are grouped into 5 main parts. The first deals with the nature of the national economic plan and the techniques used in its construction and execution. The second part examines the organization and operation of industry, agriculture, trade, and the labor force. The third part includes discussions of national income concepts and measurements and of the monetary and banking and fiscal systems. In the fourth part, Western and Soviet Bloc theories on economic calculation, pricing, and resource allocation under socialism are examined. The final part includes a chapter on intrabloc trade and one on economic competition between the Soviet Union and the United States.

The book has a number of features which will appeal to many readers and teachers considering it for adoption. One of these is its summary and synthesis of the extensive body of literature on various aspects of the Soviet economy which has appeared in journals and monographs in the last decade. The treatments of the labor force and of national-income and industrial-production measurements are examples. Also, the effort to develop a model of socialist central planning applicable not only to the Soviet Union but also, with appropriate modifications, to the rest of the Soviet Bloc provides a convenient and helpful theoretical framework for the study of the Soviet economy. In his treatment of the various topics, the author endeavors to apply the concepts and tools of contemporary economic theory to the analysis of Soviet economic planning and economic policy. Thus the discussion of economic calculation in the Soviet economy is preceded by a review of the debate among Western economists during the period between the two World Wars on the possibility and methods of rational allocation in socialism.

Some aspects of the book, however, will be less satisfying to many readers

As a result of the effort to present a comprehensive but concise discussion of the Soviet economy, the treatment of a number of topics is too brief and condensed to be clear to the average reader lacking previous knowledge of the subject. This is true, for instance, in the treatment of input-output and activity analysis (pp. 17-21) and the Marxian two-sector economic model (pp. 131-34). Moreover, the author's practice of not citing in footnotes the sources of his data and references to the authorities and studies mentioned in the text does not aid the reader in looking elsewhere for clarification. Although an extensive bibliography is provided at the end of the book, it is extremely difficult for the reader to identify in the bibliography the sources for statements and references in the text.

The coverage of the book will also not be completely satisfactory to some users. In his effort to present a model of "mature" Soviet socialist central planning, the author has excluded specific discussion of the historical path of Soviet economic development and the geographical and ideological factors affecting it. Although there are some references, at various points, to historical and ideological aspects, they are not emphasized. The discussion of foreign economic relations in Chapter 14 deals exclusively with Soviet Bloc trade, neglecting Soviet economic relations with the less developed countries and with the industrialized capitalist countries.

While this book offers a concise and sophisticated treatment of the Soviet economic model, its strengths in this regard also will cause students and teachers lacking previous familiarity with the Soviet economy some difficulties in the use of the book. Some of these problems can, however, be overcome by the use of journal articles and collections of readings to supplement the book by providing more extensive and simpler explanations on topics covered in the book, as well as material on other topics.

MORRIS BORNSTEIN

University of Michigan

Economies of the World Today—Their Organization, Development, and Performance. By CLAIR WILCOX, WALLIS D. WEATHERFORD, JR. AND HOLLAND HUNTER. New York: Harcourt Brace and World, Inc., 1962. Pp. vii, 148. Paper, \$1.85.

This book examines the main features of the economies of the Soviet Union, Communist China, India, Great Britain, and the United States. It has been written to be used as supplementary material in the introductory economics course and should prove to be a highly useful addition. The amount of time spent on comparative forms of economic organization in the introductory course is ordinarily quite limited. Authors of the leading texts typically add a short chapter at the end of their voluminous texts on this subject. Frequently, this chapter is little more than a sketchy treatment of Marxian ideas, plus some descriptive material on the Soviet economy, fascism, and British socialism. The very heavy emphasis given in the texts to the private enterprise market economy, with extensive theoretical treatment of its main features, can create a lopsided view of the breadth and complexity of economic organization. In view of the vast changes that have occurred in the

recent past, a broader perspective is certainly needed if the beginning course is to fulfill its function as an essential part of the liberal arts curriculum.

The introductory chapter discusses terminology and explores the meaning of economic individualism, economic collectivism, and various mixtures of these as predominant characteristics of the different economies. Concepts of economic growth and development are then given major attention, supported with statistical data and charts showing the per capita gross national product for most of the nations of the world in 1961, and the rates of economic growth of many of the principal countries in the 1950's. A theoretical analysis is made of the factors that influence these rates of growth. Finally, the authors select five criteria to evaluate the performance of an economy. These are Plenty (standard of living), Economic Freedom (to choose an occupation, to spend, save, invest, etc.), Justice (equality of economic opportunity), Personal Security, and Growth. The relationship between the priority given any particular goal in a given economy and the nation's political, social, and cultural institutions is emphasized.

Each chapter devoted to a specific economy gives a short historical background sketch, and indicates the stage of economic development reached. The Soviet Union is depicted as a relatively mature, thoroughly collectivized economy with authoritarian political control. The central role of over-all planning, the radically different functions performed by prices in the system, the problem of incentives, and the problem of the degree of economic freedom the system can permit shows how the authoritarian goals of the political elite structure the economic organization. Communist China, although similar to the Soviet economy in its collectivist, authoritarian nature has developed its own methods of transforming itself from an agricultural economy to an industrialized one. The creation of the commune, a new social and economic unit displacing the traditional family unit, and the widespread use of labor-intensive technology are unique features of the Chinese economy. The enormity of the revolution that is being attempted in the political, cultural, and economic life of this nation of more than 700 million people, is something that few students are aware of. While its growth rate has been spectacular, the harsh human costs have been very great.

India presents a contrast to Communist China in its efforts to achieve similar economic goals. Reliance has been placed on economic individualism plus an increasing degree of public enterprise and planning. Although the human costs are far less than those imposed on the Chinese, the pace of growth is very slow. India's rapidly growing population and relatively limited resources, and its religious and social traditions provide great obstacles to economic progress. Over-all planning by public authorities for development has encountered a host of difficulties, and without considerable aid from other countries, the forward momentum achieved to date may be lost.

Great Britain provides an example of a mature, relatively affluent society that has depended largely on the operation of free market forces to guide its economic life. The high priority given to the goals of "welfare" and "security" have brought more and more government modification of the free market economy. The British social security system is evaluated, particularly the

provision made for medical services for all. The conflict between "welfare" and "growth" are examined in the context of Britain's dependence on foreign trade and its chronic concern over balance of payments problems. Finally, the United States is appraised as the leading economy that is more thoroughly individualistic than any of the others. Nevertheless, the competitive discipline of the free market economy is blunted by the rise of huge corporations, great labor unions, and large public corporations. While the most affluent of all economies, its rate relative to the Soviet economy indicates that if the disparity continues, the United States can be surpassed in per capita output.

The compact, well-organized fund of up-to-date information in this book will be of value in a number of economics courses, but is especially well written for the introductory course. In their preface the authors state that "they have long felt that the introductory course in economics should culminate in a comparison of several different economies. They felt that the student would thus obtain a clearer perspective of his own economic system and the principles and problems he has studied would take on a new meaning when viewed in relation to economies of different kinds." The reader will find a hearty accord with this viewpoint. The comparative study of different economies will help to integrate the various topics treated separately in the introductory course. The student will find that this grasp of the monetary system, the price system, the role of saving and investment, and the structure of a market economy with other economies provides a highly useful background for absorption of the materials in this book. His understanding of the scope of economics should be substantially broadened and deepened. The brief bibliographies suggested as further reading at the end of each chapter provide a ready means for further exploration of the issues.

LEWIS

Tufts University

Statistical Methods; Econometrics; Social Accounting

The Share of Top Wealth-Holders in National Wealth, 1922-56

J. LAMPMAN. National Bureau of Economic Research, General Series, No. 74. Princeton: Princeton University Press, 1962. Pp. 100. \$6.50.

This book presents annual estimates of the wealth holdings of the top 1 per cent of the population if they had died during the year, would have left estates large enough to require filing a federal estate tax return. The data from which the estimates have been derived are the estate tax returns filed. The minimum requirement currently is \$60,000, but it varied from \$40,000 to \$100,000 during the period analyzed. Knowing the age distribution of persons with wealth and the percentages in each age group who had wealth holdings of various sizes, and knowing the age distribution of the population as a whole, one could construct a hypothetical wealth distribution for the population as a whole—as given age, the probability of death is independent of wealth. Of course, the entire distribution cannot be estimated from the data analyzed in

However, this analysis of the wealth holdings of those with the largest amounts of net assets complements other studies, which generally have been based on samples containing very small numbers of the largest wealth holders.

The estimation procedure—previously used by Mendershausen in estimating a part of the U.S. wealth distribution and by research workers in Great Britain, Italy, the Netherlands and New Zealand—together with the sources of data, are described in detail in Chapters 2 and 3. Chapter 4 describes such estimated joint distributions as those of wealth, age, and sex; wealth, sex and marital status; and wealth and residence for the year 1953. Chapter 5 presents estimates of the amounts of various classes of assets held according to the size of the estate and according to age for 1953 and by years for all estates, 1922-54. Chapters 6 and 7 deal with the changes in the shares of total wealth held by the top wealth-holders over the period analyzed. An appendix presents much of the underlying data and estimates, and there are also appendices relating to the effects of price changes and to forecasting the number of estate tax returns.

Among the findings of the study are: (1) The top wealth-holders are also in the upper age groups, the median age being 54 years. (2) Women top wealth-holders increased in relative importance during the period studied. This phenomenon is explainable partly by the increase in the relative population in the community-property states and the higher survival rate of wives. Thus, if a man holding property in community with his wife dies before his wife, only half the property acquired after marriage is reported for estate tax purposes. When the wife dies, the other one-half plus the inheritance is reported. (3) There was a pronounced decline between 1929 and 1949 in the percentage of personal wealth held by the top wealth-holders. Between 1949 and 1956 this trend was reversed. This decrease in inequality in the wealth distribution between 1929 and 1949 is attributed to decreased inequality in the income distribution and the consequent decrease in the inequality of the saving distribution. No explanation for the reversal since 1949 is offered.

Since the estimates of wealth for the population as a whole as well as for the top wealth-holders are both subject to error, one should know something about the error distributions before he evaluates statements about the time trend of wealth inequality—as measured by the shares held by the top wealth-holders. No confidence intervals for either of the sets of estimates are presented. However, the study's importance need not be interpreted solely in terms of what it can say about the time path of wealth inequality.

O. H. BROWNLEE

University of Minnesota

An Introduction to Econometrics. By LAWRENCE R. KLEIN. Englewood Cliffs: Prentice-Hall, 1962. Pp. viii, 280. \$7.50.

Lawrence Klein has now written a nontechnical introduction to econometrics, intended to preface the serious study of formal methods, and I believe the book must be regarded a major pedagogical success. His procedure is to introduce the student to econometrics by considering a sample of the best applied

econometric studies in each of several subject-matter areas. The areas included, with the names of some major investigators whose researches are discussed, are: demand analysis (H. Schultz, K. Fox, H. Houthakker); production and cost analysis (P. Douglas, J. Dean, W. Leontieff); distribution of income and wealth (V. Pareto, H. Lydall, F. Adams); models of growth and cycles (M. Friedman, L. Klein, R. Solow, J. Tinbergen, F. and I. Adelman).

In the discussion of each subject, a certain amount of relevant economic theory is presented, the investigator's statistical methods and results are discussed, and relevant econometric problems are outlined. By the end of the book the reader has reviewed a considerable amount of basic economic theory and statistical methods and received a lucid and thoughtful introduction to almost all the major problems—such as identification, multicollinearity and autocorrelated residuals—with which econometrics deals. Throughout, the emphasis is on the explanation of the relevance of problems to substantive research rather than on the presentation of formal methods to deal with the problems. The purpose is to whet the reader's appetite for further, more systematic study of methods.

Although this is obviously a desirable approach, it is very difficult to bring off. There are temptations to include too much, to include studies whose understanding requires extensive knowledge of specialized areas of economics or statistics, to make the presentation uneven, and to give the reader the impression that econometrics is a miscellaneous collection of unrelated studies. Klein has avoided these pitfalls and others. He has not attempted to be comprehensive or completely up-to-date in his choice of studies, but has carefully chosen investigations that illustrate important economic and statistical insights, and whose main outlines can be understood at a rather elementary level.

This book should finally put to rest the notion, still held by some economists who should know better, that econometrics consists in the mechanical application of standard mathematical and statistical formulas to the exclusion of nonquantifiable considerations. Good econometric research, like all good empirical research in economics, requires deep understanding of relevant institutions, insight, judgment, flexibility, and a certain amount of sheer opportunism. The triumph of Klein's book is that he brings out both the nonmechanical aspects that give uniqueness to the investigations and the careful use of theory and statistical inference that give them unity.

Although Klein has been very careful to keep the book at a uniform level of difficulty, it will not be easy reading for the intended audience. Prerequisites should include the material covered in undergraduate courses in micro- and macrotheory and statistics (including regression analysis). In addition, the student must be able to understand elementary algebraic notation and manipulations. Students who are technically-minded enough to be willing to follow the argument will probably have had a course in calculus, though it is not necessary. Even with these prerequisites, many students will find parts of the book tough going. However, the required intellectual investment will yield high returns. The social dividend would be increased if every graduate stu-

dent in economics would read this book even if he pursues his study in econometrics no further.

EDWIN S. MILLS

Johns Hopkins University

Economic Systems; Planning and Reform; Cooperation

Rachunek ekonomiczny w socjalizmie (Economic Calculation under Socialism). By JANUSZ G. ZIELINSKI. Warsaw: Panstwowe Wydawnictwo Naukowe, 1961. Pp. 226. Zlotys 18.

The author defines economic calculation as measurement of costs and benefits resulting from alternative decisions on resource allocation. In a planned, socialist economy the use of a "market-type" calculation is advocated, scarcity prices (which include interest and rent charges) serving as indices of terms on which alternatives are offered. Two variants are considered, depending on whether the product- and input-mix of each firm are selected by its manager (Oskar Lange's well-known "competitive solution") or by the Central Planning Board itself ("the shadow-market solution" presumably involving the use of electronic computers). In either case resources are allocated in accordance with prices reflecting relative scarcities. The use of such price parameters by the planners is held compatible with a thorough-going centralization of the decision-making process. Either variant of the market-type calculation is held preferable to the "direct" method actually employed in socialist (Soviet-type) economies, under which inputs and outputs are centrally planned, coordinated, and allocated in physical terms: "allocation decisions result directly from technological relationships . . . and not from cost-price relationships" (p. 89). The major shortcoming of the direct method is that it treats production coefficients as structural constants and therefore lacks any criterion for the choice of production methods.

Zielinski does not deal with the interesting question, how have Soviet-type economies managed to function and to revolutionize their production functions in the absence of such a criterion? In this reviewer's opinion, imports of ready-made U.S. production methods into the USSR and then of Soviet ones into countries of East-Central Europe may have provided a partial substitute for this deficiency in the direct economic calculation in many crucial investment decisions. Needless to say, such imitative practices may have led to nonoptimal solutions when the countries concerned had widely different scarcity relationships.

The author inquires next about the applicability of the tools of welfare economics for the evaluation of economic policies under socialism. His treatment is selective. Such criteria as Pareto's optimum or the principle of compensation are viewed as being of little practical use. On the other hand, the optimum conditions of resource allocation are believed to be useful and applicable to any economic system. There follows an incisive, illuminating discussion of the role of consumers' sovereignty in a planned, socialist economy. Zielinski defends "the Postulate of Limited Consumers' Sovereignty." "While

planners' preferences take precedence over consumers' preferences, especially in the domain of collective consumption, it is in the planners' own interest to take account of consumers' preferences in all cases where there is no adequate reason for not doing so" (p. 139). The author agrees with Abram Bergson that there exist substantial ranges of choice within which the Central Planning Board is indifferent as to resource allocation and emphasizes the enormous number of choices within such areas in which "the Central Planning Board's only preference is to do . . . whatever consumers want it to do" (p. 169). Zielinski points out that consumers' sovereignty should extend not only to the output of consumers' goods industries but also to induced investment in such industries. He does not consider that in exercising these rights consumers might affect the rate of investment and of economic growth and thus infringe upon the jealously guarded areas in which the planners have very definite preferences.

It is interesting to note that the Polish economist emphasizes the theoretical and practical significance of consumers' sovereignty and presents a persuasive plea for its partial restoration in planned socialist economies at the time when some Western scholars criticize the doctrine in question as being incomplete, ambiguous, and lacking theoretical refinement.¹ The proper approach may lie somewhere between "the [Western] economist's excessive preoccupation with consumers' choice in the market" mentioned by Scitovsky (*loc. cit.*, p. 262), and the East European planners' "prejudice against obeying consumers' preferences" described by Zielinski (p. 140).

Perhaps the time has come to do what J. M. Clark once did for the concept of competition and to formulate a doctrine of Workable Consumers' Sovereignty, with suitable variants applicable to different economic systems. An English translation of Zielinski's thoughtful and thought-provoking study might greatly assist us in this challenging task.

LEON SMOLINSKI

Boston College

¹ Tibor Scitovsky, "On the Principle of Consumers' Sovereignty," *Am. Econ. Rev.*, Proc., May 1962, 52, 262-68; Jerome Rothenberg, "Consumers' Sovereignty Revisited and the Hospitality of Freedom of Choice," *ibid.*, pp. 269-83.

Business Fluctuations

Postwar Cycles in Manufacturers' Inventories. By THOMAS M. STANBACK, JR. Studies in Business Cycles, No. 11. Princeton; Princeton University Press for National Bureau of Economic Research, 1962. Pp. 146. \$2.00.

This short book is in effect an extension of Moses Abramovitz's pioneer work, *Inventories and Business Cycles, with Special Reference to Manufacturers' Inventories*, published by the National Bureau in 1950. Abramovitz dealt with the interwar years; Stanback carries the study through the 1947-56 period.

A principal relationship which Abramovitz isolated seems to be confirmed by later data, namely the differing impact of nonfarm inventory changes (mainly changes in manufacturers' inventory) upon GNP as between con-

tractions and expansions. The relation between inventory disinvestment and GNP decline is noted as particularly strong; and the fact that there has been a postwar reduction in size of inventories, in relation to output and sales, does not seem to have disturbed this association. Thus Stanback's observation (p. 5), in a review of both interwar and postwar periods: "Measured on the basis of annual data, the changes [in nonfarm inventory] are found to have accounted for at least 42 percent of the decline in national product in every business cycle contraction except that of 1929-32." The relation is of lesser magnitude for expansions. Stanback agrees with Abramovitz that the typically longer duration of the expansion period accounts for much of this; he thinks it is also (in the postwar period) because inventory turning-points have run ahead of GNP, so that the impact of inventory investment is in part unobserved when a GNP-trough-to-GNP-peak period is used.

It seems worth noting that this percentage relation between change in inventory and change in GNP varies considerably, both in contractions and expansions. The figure is sometimes disconcertingly high. In the 1948-49 contraction, using annual data, inventory disinvestment is recorded as 1,400 per cent of the change in GNP. The use of quarterly data (which Stanback had available for the postwar years, in contrast to the annual figures which Abramovitz had to use) gets this figure down to 195 per cent. Even the percentages based on quarterly data vary substantially. It is interesting, though doubtless coincidental, that postwar contraction-period percentages show a steady decline: 195 (1948-49), 62 (1953-54), and 35 (1957-58).

Any study of the relation between inventories and national income can consider the impact of inventory changes upon income, or else the impact of income changes upon inventory, or finally the interrelationship between the two. Stanback's discussion of the first of these topics (in part described above) is in Chapters 2 and 3. His final chapter (Chapter 8) considers the third—and most difficult—of these. It is an evaluation of Metzler's accelerator-multiplier inventory models, in the main a summary of the manifold problems involved in subjecting such models to quantitative test. In this short book the author does not undertake much analytic path-breaking with respect to inventory-income interrelationships, nor for that matter with respect to the impact of inventory changes upon income. Stanback's principal interest (in Chapters 4 through 7) is with the forces, changes in income and others, which seem to bear upon manufacturers' inventory levels.

In this exploration, Stanback agrees with Abramovitz that total manufacturers' inventory movements are best considered as an aggregate of (at least) three subtotal series: purchased materials, goods in process, and finished good inventories. The analysis is conducted accordingly. In the outcome, some of Abramovitz's tentative conclusions are qualified; but none is really overthrown.

Stanback is particularly interested in the evident tendency for turns in purchased-material inventory investment (notably in durable-goods industries) to lead business-cycle turns over the period studied. These figures may be in some small degree at odds with Abramovitz's initial assumption that the level of such inventories (and hence inventory investment) is primarily dictated

by the level of manufacturing activity, subject to some lag (of a determinate length) due to delays in materials delivery. Stanback sizes that the size and influence of unfilled-order backlogs may be the discrepancy. With output level unchanged, a decline in the order backlog may be considered a forewarning of recession and of the need to reduce inventory on hand. The evidence does not afford the prices of materials a particularly important role in determining inventory investment.

The availability of quarterly data for GNP and nonfarm inventory investment in the postwar years is evidently a considerable advantage for the economist as this. Stanback's task in estimating the relation of inventory turns to output and cyclical turns is considerably eased in contrast to that of Abramovitz, who was forced to work with annual data.

This is a careful and painstaking work. Yet one is left with the impression that the material to be handled is complex and difficult in the sense that the analytic structure for its interpretation is (and may remain) incomplete.

ROMNEY

Brandeis University

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

Money, Saving and Investment in English Economics, 1800-1850

CORRY. New York: St. Martin's Press, 1962. Pp. xi, 188. \$6.75.

Opinion on Bank Rate, 1822-60. By A. B. CRAMP. London: G. B. Cramp Ltd. The London School of Economics and Political Science, 1962. Pp. xi, 118. 25s.

By directing attention to the role of money in nineteenth-century economics and policy, B. A. Corry and A. B. Cramp focus on the central issues of that classical era. Oversaving, overinvestment, recurring monetary crises and occasional panics are standard references of the period. Cramp's book is an interesting essay on the history of monetary policy. Corry's book makes a contribution to the history of unorthodox thought.

Cramp's leading question is how the Bank rate operated before the development of a conscious policy of open-market operations to make it effective. Opinions are drawn from parliamentary committees, pamphlet literature and contemporary periodicals, especially *The Economist* and *The Bankers*. Among the individuals whose opinions feature in the discussion are Horsley Palmer, S. J. Lloyd (Lord Overstone), Walter Bagehot, John Lubbock, J. W. Gilbart and Thomas Tooke.

Among the group which held the opinion that the Bank rate had little influence on the market rate of interest were Bank of England officials who contended that they could not establish, nor influence much, the market rate. Shades of McChesney Martin in our time! Cramp sagaciously points out this position by Bank officials to their reluctance to accept the responsibility for fixing the market rate of discount. Among a large

thought that the Bank rate did influence significantly the market rate of interest, Cramp finds the "confidence effect" rather than the "incentive effect" (Radcliffe Committee terminology) a more correct and a more widely held interpretation of the *modus operandi* of the Bank rate. In an age before the Bank of England acknowledged its responsibility as lender of last resort, Cramp believes businessmen and provincial bankers had good reason to run for cover whenever the Bank rate rose to betoken storm clouds. Cramp's interpretation is closer to the views expressed by Sayers than to the interpretations of Hawtrey and Elmer Wood, and Cramp's volume may be viewed as a complement to Sayers' *Central Banking after Bagehot* (1957).

Corry develops in some detail the theory of money, investment and savings of classical economics from Adam Smith to J. S. Mill, and finds that the classical economists had a more sophisticated and thorough treatment of money than is commonly believed. More interesting than the orthodox writers, but definitely inferior according to Corry, are the ideas concerning money, saving and investment of the unorthodox dissenters, including Lauderdale, Malthus, Chalmers, Thomas Attwood, William Spence, John Rooke, John Barton, John Lalor, John Fullarton, Thomas Joplin and William Blake. Despite some brilliant intuitions, however, these dissenters failed to destroy the logical foundations of classical macroeconomics. They assumed, along with the classicists, an equality of *ex-ante* savings and investment and failed to develop a multiplier theory. Hence none deserve to be classed as "early Keynesians."

Among the dissenters of the period, the one who most nearly anticipated Keynes was the relatively unknown John Lalor, author of *Money and Morals* (1852). Unlike the others, Lalor did recognize an *ex-ante* inequality of savings and investment and did develop a multiplier theory. However, he had no satisfactory theory of the rate of interest and therefore he also fell short of a claim to legitimate Keynesianism.

Corry does well to "discover" John Lalor, but why does he not mention contemporaries such as John Gray and John Francis Bray, whose ideas were closer to Keynes in important respects than were the writers he does discuss? Perhaps the answer lies in Corry's general philosophical orientation. While he largely avoids the broader issues of sociology of knowledge, enough slip is showing to reveal what is beneath the exterior garment. He expresses indignation toward those who interpret classical economics as an argument for *laissez-faire* policy. Instead he contends that the classical school's affinity for *laissez-faire* stemmed from classical theory, not the other way round. This position taken by Corry is more easily asserted than proved, and perhaps it reflects the philosophical position of his teacher, Lionel Robbins, whose *The Theory of Economic Policy in English Classical Political Economy* (1952) is cited as a model work.

Some peculiar conclusions flow from Corry's interpretation. John Stuart Mill is pictured as the arch-conservative of the classical theory of money, saving and investment, a position which seems dubious in the light of Mill's chapter on "Excess of Supply" in the *Principles*, where he comes close to throwing overboard the law of markets. A stronger case can be drawn, I believe,

for viewing Mill as the first of the theoreticians of the welfare state rather than the high priest of anti-interventionist classical *laissez-faire* economics.

Both Cramp and Corry are, in a sense, concerned with the antecedents of Keynes, and their works form part of a general rewriting of the history of economics which is following in the wake of the Keynesian Revolution. Unfortunately neither penetrates the real meaning of Keynes' monetary economy, in which money is a unique asset as the socially recognized form of private wealth. Cramp brushes against the problem of a monetary economy in discussing the confidence effect, which is associated with uncertainty concerning the conversion of other assets into cash.

My main criticism of Corry is not in the details of his analysis but in the broad picture he paints of the interplay between ideas and events. Readers are left with the impression that classical economics triumphed, and subsequently hardened into dogma, because it was intellectually superior to the theory of unorthodox dissenters; and that only a great intellectual tour de force by Keynes unshackled society from the tragic grip of an unwise noninterventionism which failed to develop planning for full employment. Such an interpretation is flattering to economic theorists, and to the classicists and Keynes in particular, but I frankly doubt that it accurately describes what happened in history.

DUDLEY DILLARD

University of Maryland

Money, Banking and Monetary Policy. By CLIFTON H. KREPS, JR. New York: The Ronald Press Co., 1962. Pp. iv, 607. \$7.50.

This money and banking principles text is divided into six parts, respectively occupying the proportionate space indicated: Money (9 per cent); Monetary Standards (14 per cent); The Banking System (13 per cent); Commercial Banking (26 per cent); Central Banking (21 per cent); and Monetary Policy (17 per cent). As the author's division of the field and apportionment of space suggest, the approach is subject-integrated and policy-oriented. The aim of the book is to develop in its readers an appreciation of the uses and limits of monetary-standard, banking, and monetary policies and a capacity to analyze monetary and banking policy problems of national economic significance.

Kreps has woven into his text a background of the economic, monetary, and banking theory necessary to facilitate an understanding of why and to what extent banks create money, as well as how they do it. In addition, to give the student a sensitivity to the policy usefulness of theory, the author analyzes the historical development of monetary and banking institutions and structure, commercial banking theories and practices, and the observable role of theory as a tool of central-bank policy.

Each of the 30 chapters is concluded with concise review questions and a number of citations of supplementary readings. A three-paged Appendix to Monetary Policy—on the background of the Commission on Money and Credit—completes the work.

The presentation strives to make explicit for the beginner much continuity

often left implicit for the initiated. For example, explanations are given of the significance of: leakages and offsets in the money end of the circular flow of exchange; the money-creating-and-destroying powers of the commercial banks exercised as a by-product of the profit motive; financial intermediary institutions as indirect influences on the volume of "effective money" via its income velocity factor; and the International Monetary Fund as a reflection of our "double" (internally "fiat" and externally "gold") monetary standard.

The gravitation of both content and narrative around commercial banking as a focus of interest does much to unify the presentation. In unfolding the subject, the author's preoccupation is more with integrating the material covered and orienting it to policy uses than with maximizing the number of topics included or describing financial institutions as such.

Kreps is a persuasive defender of the anti-inflation capabilities of monetary policy. He argues that financial intermediaries cannot by-pass the effectiveness of monetary policy if its restrictive pressure is tellingly applied against the power of these nonbank institutions to modify the supply of money. Along with the wider span of Federal Reserve (qualitative and quantitative) controls needed to plug up this velocity loophole, the author advocates upgrading the relative role of monetary policy—vis-à-vis debt management and fiscal policy—as an effective arm of aggregate public economic policy.

Some highlights of the work are the comprehensive picture of the U.S. monetary system and its derivation, the mature treatment of the international financial position of the United States, the probing consideration of the typicalness of the typical bank, and the functional handling of financial institutions.

It would be difficult to make substantial criticism of the book; but a purely negligible point which some readers may notice is Kreps's use of the phrase "secondary deposits" for the more usual—and, to this reviewer, more expressive—"derivative deposits." The author's nonencyclopediaic approach renders the work more useful as a review reference than as a bookshelf manual. The book is, however, a formidable addition to the textbook sector—and to the general literature—of the field. It is both cohesive and readable.

In fact, if—after exposure to this penetrating exposition of the subject—the student should by any chance fail to acquire a depth of perspective for understanding the monetary and banking policy problems with which our economy is constantly wrestling, the blame cannot be laid at the door of the author.

HOWARD S. GORDMAN

Georgia State College

Public Finance; Fiscal Policy

Tax Credits and Intergovernmental Fiscal Relations. By JAMES A. MAXWELL.
Washington: The Brookings Institution, 1962. Pp. xiv, 202. \$3.75.

Professor Maxwell in this book has once again displayed his command over a most complex and intricate area of public finance, that of the relationship

between the central government and state and local governmental units. But, partly because of its professional competence, the book has left this reviewer with a pessimistic appraisal of the prospects of working out a really desirable solution to the complex problems in this area, and perhaps even of defining what such a solution would be.

Maxwell's main concern, like that of others viewing this question in broad terms, is that in the United States the expenditures of state and local governments have outgrown the available sources of revenue in recent years. And more than this, a continued rapid expansion of expenditures seems called for in areas for which the states and localities have traditionally been allocated primary responsibility in our society—areas such as schools, roads, recreational facilities, utilities, and other similar public services. Opposed to this need for ever-increasing expenditures is the well-recognized fact that state and local revenue systems, depending heavily on inelastic revenue sources, are not geared to satisfy it. The almost inevitable result, barring some change in existing practices, is an unduly low level of expenditures on many of our most vital public services, and at the same time an inequitable distribution of the tax burden to finance those expenditures which are made.

There is nothing new in the statement of this dilemma. The contribution of the book is rather in its careful and systematic treatment of the devices which have been used in the United States, or which might be used, to resolve it. Attention is concentrated almost entirely on the fund-raising aspects of the problem; only one short but interesting chapter is devoted to federal grants (conditional or unconditional) as a means of restoring the balance between the revenue-raising capacity and the expenditure needs of the various levels of government in our federal system.

In the United States we have had experience with two major tax credits, a death tax credit since 1916 and an unemployment tax credit since 1935. A chapter is devoted to each of these credits, tracing their purpose as originally enacted, the course of their development, and the problems which have arisen in connection with them. In a broad sense, each accomplished its objective. The death tax credit established in 1916 successfully forestalled the efforts of certain states (Florida and Nevada) to attract wealthy residents away from other states by constitutional amendments forbidding their legislatures from enacting death taxes. Thus, the general use of death taxes by the states was not undermined by the "anarchistic" moves by a few states, to use Maxwell's adjective. Similarly, the unemployment tax credit was an effective device stimulating the individual states to enact unemployment compensation plans acceptable to the federal government.

Although in these broad terms these two major tax credits could be described as successful, Maxwell in his detailed discussion of them points out difficulties which have arisen with each of them. The death tax credit, for example, did not prevent states from enacting "death taxes which varied in type, definitions, rates, and exemptions, so that complexity and structural disorder became serious problems" (p. 159). Likewise, the unemployment tax credit has not resulted in a uniform rate of payroll tax and the elimination

of interstate competition. Rather, largely through the so-called merit-rating devices, a variety of rates (or tax bases) prevails, and the danger of interstate competition has reappeared. Maxwell's concluding judgment on the unemployment tax credit is that "in this its most ambitious use [the tax credit] has proved inflexible. Possibly, even probably, the credit was not the right technique to secure a good system of unemployment insurance for the long run" (p. 159).

The second portion of the book consists of an analytical discussion of the effects and desirability of other tax credits or similar devices for strengthening state and local revenue sources with which we have had little or no experience in the United States. A long chapter is devoted to individual income tax credits of various types. The closely related topic of the deductibility of state and local taxes is also examined at length. Finally, as noted earlier, a very brief discussion of federal grants is presented to round out the possible alternatives.

Although the second portion of the book contains more new material than the discussion of the death and unemployment tax credits, no attempt will be made here to summarize Maxwell's conclusions. A host of considerations of different dimensions have to be introduced, and any conclusions rest on the relative weight attached to these considerations plus the value judgments which the appraiser brings to the problem. Suffice it to say that the whole area of intergovernmental fiscal relations is one in which only the ignorant or the foolish would dare to propose simple, dogmatic solutions to the dilemma posed in the opening paragraphs of this review. For those so tempted, as for others interested in a scholarly and penetrating treatment of the many complexities presented by tax credits and other similar means of intergovernmental fiscal relations, this book is recommended.

J. KEITH BUTTERS

Harvard University

Dividends Under the Income Tax. By DANIEL M. HOLLAND. NBER Fiscal Studies No. 7. Princeton: Princeton University Press for National Bureau of Economic Research, 1962. Pp. xvii, 189. \$4.50.

In this monograph, Professor Holland investigates four main questions: the size of dividends as a component of individual and taxable income, the dividend "gap," the tax liability resulting from dividends, and the differential taxation of corporate earnings resulting from the federal corporate profits tax and the federal individual income tax. The latter topic was explored in some detail in Holland's earlier study, *The Income Tax Burden of Stockholders*. These are questions to which quantitative answers can be given and Holland proceeds to do so carefully and imaginatively within the limitations of the available data.

Dividends taken alone are a small component of personal income amounting to less than five per cent of personal income and about the same of adjusted gross income in recent years. The dividend category has the distinction of being more unequally distributed than other forms, the 2 per cent of

dividend recipients having incomes of \$50,000 and over obtaining 36 per cent of reported dividends. The dividend "gap," a matter which has been given considerable attention because of efforts to introduce collection at the source, turns out to be, according to Holland's estimating procedures, in the neighborhood of \$1 billion in recent years or about 10 per cent of the presumably correct reportable figure. Considerable evidence exists that the underreporting occurs primarily in tax brackets under \$25,000—the very wealthy apparently being more concerned than the merely wealthy in keeping free of the clutches of the law. Of less interest is the specific tax liability attributable to dividends and to the built-in flexibility of this component. Those familiar with tax literature will not be surprised to learn that the present two federal income taxes overtax low-income stockholders and undertax high-income stockholders. This hoary piece of knowledge, however, seems incapable of penetrating the thinking of many Congressmen, journalists, and even economists.

Under the stimulus of a good question raised by Willard Thorp, Holland investigates the relation between the pay-out policy of corporations and the size of income-bracket stockholders. Thorp surmised that the tax laws might induce high-income stockholders to hold stock of corporations with low pay-outs, in search of large capital gains. On tax-incentive grounds, the surmise is reasonable; a high-income stockholder should prefer capital gains to equal dividends. Holland's high quality detective work leads to the interesting result of no significant relationship at all.

A critical theoretical question in Holland's work concerns the shifting and capitalization of the corporate income tax. Holland assumes that the tax is neither shifted nor capitalized, relying upon undisclosed authorities for this view. A systematic review of the literature might have been undertaken to provide a rational basis for the assumption. In my view, Holland is correct enough, provided that the corporate income tax is considered along with other taxes, namely the personal income tax. Those who claim that the tax is shifted have usually considered the tax in isolation, neglecting the fact that gains from other business forms considered alone are also taxed, embracing once again the "double-taxation fallacy."

Holland has not answered all the questions that need to be answered by evidence in connection with the combination of corporate and personal taxation. There is, for example, only fragmentary information about the extent of underreporting of total net gains, realized and unrealized, associated with security ownership, and the extent, if at all, corporations are taxing their stockholders by earnings retention. To learn more about such matters, reported corporate profits data will need close examination, including correction, if possible, for the distortions introduced by accelerated depreciation and various other inaccurate accounting procedures promoted by the income tax laws and regulations.

Holland has in this study prepared a solid piece of research which should prove useful to students of finance as well as those who merely wish to know more about the economic facts of life.

EARL R. ROLPH

University of California, Berkeley

The Financing of Economic Development. By SANTIKUMAR GHOSH. Calcutta: World Press, 1962. Pp. 100. Rs 6.50.

Deficit Financing and Capital Formation—The Pakistan Experience, 1951-1959. By PARVEZ HASAN. Karachi: The Institute of Development Economics, 1962. Pp. 97. Rs 5.

These two small volumes lead us through the frequently but still incompletely explored subject of finance and the process of economic growth. The first reviews the general problem with some special reference to India's five-year plans; the second is an excellent case-study of the Pakistan experience with deficit financing during the decade of the 'fifties.

Ghosh approaches the problem in the broadest terms: What financial policies might be used to mobilize resources for capital formation and introduction of improved techniques? He devotes one chapter each to credit creation and inflation, taxation, and borrowing from abroad. His analysis is discursive rather than incisive. The book is a review of principles and problems rather than an analysis in depth pushing out frontiers of knowledge; it is pitched at a fairly high level of generalization and does not seek to provide an explicit set of prescriptions for the practitioner or the policy-maker. For example, in the chapter on inflation as a device for forcing saving, we are cautioned that inflation must be used discreetly, with restraint and for limited periods; in the chapter on taxation the author points to the need for reduced dependence upon indirect taxation, especially customs duties, and for improved tax administration; similarly, we are reminded that capital imports must be accompanied by an investment program sufficiently productive, properly timed, and balance-of-payments oriented, to facilitate debt service and repayment. But the author does not specify the degree of inflation, the tax structure, or the investment program to be followed. Presumably these things depend upon the particular circumstances of particular countries. These points are mentioned here (there are many others which might be included) only to illustrate that the author's purpose is to describe the sort of terrain through which an economy must travel and the general nature of the pitfalls to be encountered along the way; he does not give us a detailed roadmap of how to get from here to there. Given this limited goal, the book may be considered a successful effort.

The author has not completely freed himself of the limitations of analytical principles developed with reference to more mature economies. He has, on occasion, used Keynesian doctrines which are likely to have only limited applicability to underdeveloped economies. It is questionable, for example, that in an underdeveloped economy, the "social cost of investment projects" should be computed net of the increased income associated with the "induced multiplier effects" of the original increase in investment. Further, one may doubt that the experience of presently wealthy economies with respect to tax-paying capacity (as high as 30 per cent of national income) is a useful guide to the tax capacity of poorer nations.

Despite these quibbles, this little volume is a useful summary of existing professional thought on the problems and processes of financing economic development. The author's treatment is brief but it is also clear.

Ghosh leaves no doubt that he is favorably disposed toward the use of inflation (within certain limits and restraints) as one device to promote saving and investment. He includes a brief discussion of the cases of Mexico and Brazil (1945-52) to show that inflation may contribute to, or at least be consistent with, a high rate of capital formation and economic growth. Hasan's study of the Pakistan experience, however, raises anew the doubts about the general applicability of the Mexican and Brazilian examples.

Hasan's data show that Pakistan's money supply virtually doubled during the period 1951 to 1959. Roughly 85 per cent of this amount was attributable to government borrowing from the banking system, enough to finance 55 per cent of public development projects. Extensive debt monetization was accompanied by a chronic balance-of-payments deficit but only limited increases in aggregate capital formation and income. Paradoxically, the bulk of the growth of the period occurred during the first four years when the price level was actually falling because of a rising import surplus, (temporary) additions to hoards, and an overvalued currency. (Pakistan did not follow the Sterling Area devaluations of 1949 and there was a recession in Pakistan's export markets after 1952.) Following the devaluation of 1955, continued deficit financing was accompanied by dishoarding, and the price level rose 65 per cent by 1959; capital formation and growth, however, lagged behind population growth.

On the basis of these (and other) data, Hasan takes a rather dim view of inflation as a device to increase real investment and to accelerate growth. Nevertheless, one should not conclude that the experiment was an unmitigated failure. Real income did rise about 25 per cent during the period; the textile industry, expanding rapidly, acquired new capacity sufficient to meet all domestic requirements, and income from large-scale industry increased five-fold; current living standards improved substantially as indicated by rapidly rising per capita consumption of wage goods. A key fact—and lesson to be learned—is that the stagnation after 1955 was attributable primarily to an inability to capture or immobilize rising agricultural income. (In Pakistan, not unlike other poor countries, 60 per cent of the national income goes to the 80 per cent of the population in the agricultural sector; one-half of agriculture operates on a subsistence basis.)

At the risk of doing violence to Hasan's careful work we summarize the major conclusions to be drawn from his analysis as follows: (1) Despite a high rate of return on capital, in Pakistan as in most poor countries, private investment is not a sufficiently attractive alternative to consumption, hoarding, or capital export. This is true even in times of inflation. (2) Credit creation to finance public capital formation will, in the short-run, induce private saving and hoarding. Hoarding will be encouraged if, simultaneously, "superior goods" disappear from the market place (e.g., if importation of products important in the budgets of high-income groups is blocked by exchange control). (3) Eventually, as liquidity increases and money income rises, dishoarding, luxury consumption, and capital export increase the inflationary pressure on domestic resources and the balance of payments. (4) Most important of all, inflation in a predominantly agrarian economy means a chronic

improvement in the terms of trade of the agricultural sector vis à vis the rest of the economy and a reduction of agriculture's marketable surplus. Apparently the income effect of a price increase is large and negative—agriculture exhibits negatively sloping supply curves. This phenomenon, reinforced somewhat by rising consumer demand in urban areas, puts strong upward pressure on wage-good prices. In short, the Achilles heel of the inflationary device lies in the low propensity to save in the dominant agricultural sector and in the lack of a viable tax structure to absorb rising agricultural income. (This point is emphasized by Ghosh as well as Hasan.) In Pakistan, the inflation of 1955-59 was accompanied by an increase in real agricultural income, rising real per capita consumption, and a fall in the share of taxes in the national income.

Hasan makes imaginative and circumspect use of the limited available data and constructs an illuminating model of the Pakistan economy. His analysis is careful and concise. His case-study is one which students of inflation and the process of economic development should not neglect.

FRANK C. CHILD

Stanford University

Le trésor public et le mouvement général des fonds. By FRANÇOIS BLOCH-LAINÉ AND PIERRE DE VOGÜÉ. Paris: Presses Universitaires de France, 1960. Pp. 376. NF 20.

This is an authoritative treatise on one phase of financial engineering, the handling of public funds, including issuance, servicing, and redemption of public debt. The volume is centered on France, but its value is enhanced by comparisons with practice elsewhere. These comparisons are found throughout the volume; one of the most interesting is that presented in the concluding section, between the French tradition of frequent resort by the Treasury directly to the Central Bank, and utilization of the money market by the United Kingdom and U.S. Treasuries. In addition, the authors evaluate Treasury techniques in France in the light of broader objectives such as full employment and price stability; but these passages form only a minor part of the volume, and do not go deeply into the economic issues involved.

The introductory section supplies a concise and illuminating sketch of the historical development of the French Treasury over several centuries, with emphasis on the immense new tasks imposed on it by two World Wars, the depression, and the extension of state activity following the Second World War.

The succeeding sections in turn describe and analyze the Treasury in its role of manager of the public finances, its activities as a bank and part supervisor of the banking system and securities market, and its influence on the creation of money and the circulation of money among geographic areas and type of holder. It is in this last analysis that the authors present their comments on the Treasury and its techniques as one of several sets of mechanisms available for achievement of macroeconomic goals.

The French Treasury, partly owing to the philosophy of centralization characteristic of France since the Revolution and the Empire, and partly ow-

ing to the traditional isolation of the banking system from the long-term government securities market, came to carry a much larger share of responsibility for behavior of the money and capital markets than did its counterparts in the United States and the United Kingdom. A network of relationships peculiar to France has thus developed between the Treasury, the other financial institutions, and the money and securities markets. A precise understanding of this complex network is correspondingly helpful to one who wishes to comprehend the aims and effects of French fiscal and monetary policy.

Bloch-Lainé and de Vogüé have provided just this understanding. The description is lucid, replete with detail, yet so well organized and so well written that the reader is stimulated, not oppressed. This achievement is remarkable in view of the volume of technical information that must be transmitted to insure an understanding of the workings of the system.

The authors have not attempted to link their technical exposition closely with general treatments of fiscal or monetary policy in France or abroad; there is no bibliography, and there are no references to works other than French, and only to a few of those. But all this is perhaps largely explicable by the facts that the work addresses itself to the French scene, and that French public finance scholars, with a few recent exceptions, have not interested themselves or their students in the interrelations of the public finances and the money and capital markets. More questionable is the omission of sources for much of the tabular material. The lack of an index is partly offset by a detailed table of contents.

CARL S. SHOUP

Columbia University

Gegenwartsprobleme des öffentlichen Haushalts. Schriftenreihe der Hochschule Speyer, Vol. 12. Berlin: Duncker & Humblot, 1962. Pp. 183. DM 24.80.

This book presents a series of lectures and summaries of discussions on recent developments in the structure and classifications of budgets in various countries of the eastern European Continent. In the United States it has been recently intimated that the European countries in general present their budget data in an economically more meaningful manner.¹ The U.S. reader will therefore welcome a survey of recent budgetary developments in Europe. Indeed, there is much that he can learn from this volume.

However, the volume suffers from shortcomings which can often be found in proceedings of a conference. There are serious gaps in the countries covered. There is, strangely, no paper on France, which has adopted a most interesting budget reform in recent years (some reference to France is made in several papers of the volume). Also the treatment of the various countries is very uneven. Of special interest is a discussion of the budgets of the three organizations of the European Community. It is interesting to note that the sum total of the budgets of the six European member governments amount to \$37.5 billion, those of the three European communities to \$325 million.

¹In various official documents reference is made to an unpublished study by Andrew H. Cant II, Harvard University, comparing budget concepts of various European countries with those used by the United States government.

By far the largest space is devoted to the German budget problem. The German budget law was like that in the United States adopted soon after the end of the First World War and has been revised only piecemeal since then. The papers both by F. K. Vialon and P. Senf reflect the opinion that the German budget law is obsolete and does not do justice to the political, economic, and welfare functions of the budget. Vialon presents a criticism of the present budget structure and surveys a great variety of reform proposals, but it is difficult to find in his paper a clear and constructive program for budget reform (except that he suggests a freer hand for budget execution in accord with economic developments and he also asks for appointment of a commission for proposing a budget reform for the federal government and the *Länder*). Senf suggests a program classification of the budget and an interrelated national economic budget and government budget as instruments of an economic and fiscal policy.

What Senf proposes for Germany is, as he points out, largely accomplished in France. It has also been adopted in the Netherlands as J. P. de Loof explains in his two papers on the latter country. M. Frank's paper on Belgium reports on an attempt to provide by legislation for establishment of a fund for anticyclical budget policy. This attempt was a complete failure, and the author reaches the conclusion: "In other countries, measures were effectively adopted but not incorporated in a formal law. One should take to heart the experience that it is senseless to freeze economic and financial measures in formal laws." Of interest are the Swiss accounts of changes in government assets and liabilities as part of an integrated government accounting system. Also interesting is a description of the budget system of Yugoslavia with its decentralization of enterprises and autonomous organizations and local units. The following sentence is translated from the paper on Yugoslavia and not from a paper on a *laissez-faire* utopia:

State organs are not permitted in Yugoslavia to concern themselves with direct production. The State is also not permitted to offer nonmaterial goods or services. Beyond that: State organs also have no right to direct such activities directly or to determine guidelines for them. All work should be in the untied hands of the special organizations outside the government (enterprises, institutions, associations and so on).

GERHARD COLM

National Planning Association
Washington, D.C.

International Economics

Economic Aid to Underdeveloped Countries. By FREDERIC BENHAM. London: Oxford University Press for the Royal Institute of International Affairs, 1961. Pp. 121. \$2.00.

In the tradition of English scholarship, this compact book offers an illuminating overview of the international economic aid issue. Benham's lively writing style should satisfy the discriminating reader in that the unequivocal personal opinions expressed, based upon extensive travel and direct contact

with the problems of the "poor" world, have genuine policy overtones. Accordingly, this little volume will serve as a valuable supplementary text in a variety of courses dealing with the international economy.

The introductory chapter elaborates upon the distinction between the developed and underdeveloped countries, major differences among the latter, and provides numerous insights relating to controversies about economic growth. For example, Benham believes that conventional measuring techniques exaggerate global income differentials, and that generalized description (and prescription) concerning the underdeveloped countries is essentially useless, owing to widely diversified resource endowments. On the point of planning emphasis, he feels that a "balanced growth" program has much to offer, for "to concentrate on rapid establishment of manufactures is not in fact a short cut to prosperity" (p. 18). A widespread dearth of social services, including education and medical facilities, is recognized, but it is suggested that governmental outlays should be aimed toward more directly output-raising projects. Finally, he labels as "utter nonsense" Hirschman's (and Colin Clark's) view that population pressure leads to counterpressure or activity designed to maintain the level in a community, and makes a plea for an immediate international birth-control program (p. 23):

Unless the outstanding economic problem of limiting births is resolutely tackled, expenditure on palliatives in such a country [India] (whether from its own resources or from external aid) will largely be money down the drain.

Next, economic aid is defined in UN terms—i.e., assistance consisting only of outright grants and net long-term lending for nonmilitary purposes by governments and international organizations. Benham would accept this measure only if all public lending made on commercial terms were excluded. He is concerned with the granting of "aid" wherein debt service charges during subsequent years would impose a severe burden on the recipient country's balance of payments. The international flow of economic aid is then briefly examined as to source and destination; and it is noted that the contribution of France (mainly to her territories) has been greater in relation to her national income than in either the U.S. or the U.K. case. By drawing on the research of Alec Nove, it is duly recorded that the amount of Soviet aid has been exaggerated and that there is little likelihood the small volume will increase substantially in the foreseeable future.

Because the costs of needed capital assets are much the same throughout the underdeveloped world and real per-capita incomes differ widely, Rostow's "take-off" analysis is criticized as a policy guide on grounds that more is necessary than fixed "targets" of saving and investment. Discernible economic growth depends upon much more than a simple increase in capital formation—e.g., the character and abilities of the population, social customs, etc. In short, other things are in fact *not equal* when one contemplates an increase in investment outlays of a certain magnitude as a convenient vehicle to assure rapid economic development.

Chapter 3 deals with the problems of international trade in a rather con-

ventional terms-of-trade framework. The mechanics of commodity agreements and national stabilization measures are discussed in a fashion that outlines the formidable obstacles present in such arrangements. In response to the query as to what the industrial countries can do to aid in stabilizing the export earnings of primary producers, no very promising proposals are offered—e.g., they could lift import restrictions (without expecting reciprocity), artificially curtail domestic output of certain raw materials, grant easy loans to overcome balance-of-payment difficulties, and/or increase stockpiling operations of various commodities, etc. The political feasibility of implementing these “remedies” in any meaningful degree seems remote.

Chapter 4 is concerned with private capital flows as a source of needed funds. Owing to greater political stability, private investors prefer the more-developed countries, especially the oil-producing regions. As a result, “the poorest countries, with few natural resources and relatively small home markets, continue to receive little private capital” (p. 67). Other than foreign exchange losses from profit remittances, direct private investment activity does have advantages over high-interest loans to the underdeveloped countries in that new industries and technical training, etc., are provided. Nevertheless, rampant nationalism “. . . perhaps the greatest curse of our age, nearly always prevails” and serves to impede the flow from this source of help to many countries. In short, “there is nothing, say the Americans, so timid as a million dollars” (p. 80). Although some restrictions have been relaxed, private capital, at best, will only have a marginal impact in the battle to overcome poverty even though greater reliance upon the role of private enterprise is urged as a general goal of development policy.

Finally, Benham evaluates the motives for granting aid and asserts (naively?) that moral duty should provide the primary impetus, albeit the political-military rationale of “holding the line” in the cold war is recognized and subsequently questioned. In the first place, what is often labeled Communism embraces a wide range of the ideological spectrum. Secondly, “it is not true that poverty breeds Communism” (p. 89)—the discontent generated by hasty industrialization efforts provides fertile soil for propaganda seeds. With reference to the arguments against continuance of economic aid, let alone its expansion, the politically untenable proposals (involving a 75-year “intellectual lag”) espoused by M. Friedman and P. T. Bauer suggesting that more harm than good is done by such misguided generosity are patently denied. In fact, some students honestly feel that a degree of *central planning* is necessary, while the building of alleged “modern monuments” (e.g., steel mills) in certain countries is highly desirable, classical trade theory notwithstanding. Concerning future aid allocations, however, many will reject Benham’s notion that “. . . surely the interests of the underdeveloped countries should come first” (p. 103) and that grants—with a single “string” that insures the maintenance of basic human rights—are preferred to burdensome loans. Also, it appears to be unrealistic to plead for greater multilateral aid—ostensibly via the United Nations—while continuing present bilateral arrangements.

Although the U.S. public might legitimately reject certain of the author’s

value judgments, he does offer a provocative review of the aid issue. Indeed, it is unfortunate that the book was not expanded in order to allow a more extended discussion. Too, in view of the concise nature of the argument, a bibliography would have been a useful supplement to guide the ambitious reader.

J. D. DeFOREST

Denison University

The Problem of International Economic Equilibrium. By FRIEDRICH A. LUTZ. Amsterdam: North-Holland Publishing Co., 1962. Pp. 75. Paper, \$1.85.

This slim volume contains the text of three lectures delivered in the Netherlands at the invitation of the Professor F. de Vries Foundation. It deals with the major causes of international disequilibrium, considers various types of remedies, and concludes with a discussion of the problem of international liquidity.

Lutz believes that three factors have been primarily responsible for the balance-of-payments difficulties after the Second World War. First, there is the monetary factor of different rates of inflation in different countries. Secondly, on the real side, unequal rates of productivity growth per unit of labor have also contributed to disequilibrium. And finally, there is the factor of long-term capital movements. A two-country model is employed in the analysis of all three cases.

Since trade restrictions and exchange control are obviously undesirable, the author rules them out as solutions. Objections are also voiced against arrangements which require surplus countries to extend credit or donate to deficit countries. These would not only force capital movements in an arbitrary direction without regard to the criterion of relative profitability, but also tend to encourage countries to run a deficit and penalize countries achieving a surplus. At best, they only treat the symptoms rather than the disease.

To strike at the root of the malady, it is necessary to adjust the relative cost or money-income levels either directly, or indirectly through alterations of exchange rates. The effective adjustment of cost levels, however, requires a degree of flexibility which is lacking under modern conditions. As to income levels, since expansionary adjustments are easier to make than contractive ones, the danger is that surplus countries will be pressured into bearing the chief burden of adjustment, with excessive expansion and world inflation as the likely result. Thus to Lutz the best answer seems to lie in the only other alternative, namely, a system of flexible exchange rates.

In the last part, the author offers his thoughts on the problem of possible future deficiency of international liquidity. The proposal to raise the price of gold is dismissed as impractical because the move is apt to impair confidence and create inflation which would then quickly absorb the newly augmented money value of international reserves. Neither is Lutz enthusiastic about the Triffin Plan which, roughly speaking, would convert the International Monetary Fund into a sort of World Central Bank. The Plan contains certain features of compulsion, and at any rate it is believed to be no better than a sim-

pler system wherein several key currencies would serve as reserves along with gold.

On the whole, this book represents a useful if overly condensed package of analytical material. But two criticisms may be in order. First, analytically, the author is in the habit of assuming that an equilibrium price is always arrived at instantaneously. In arguing against the purchasing power parity theory, for example, he states that in view of the law of one price in the world market, the price index of international goods cannot change in one country without a simultaneous proportionate change in the other, and it is thus meaningless to base the exchange rate on a comparison of such indices. Again, in connection with different rates of inflation, he reasons that an inflation in one country will immediately push up the "world price," i.e., raise the price level in the noninflation country to an equal extent. This time, however, instead of helping the argument, the assumption of instantaneousness merely deprives him of the use of price differentials as an explanatory factor in the resultant disequilibrium.

The second criticism has to do with policy prescription. Most curiously, after pointing out the desirability of flexible exchange rates, the author proceeds immediately to tell his reader that the actual adoption of this solution is very unlikely, simply because flexible rates are formally excluded by the statutes of the IMF! This is indeed like telling a hungry youngster that there is a nice piece of pie in the refrigerator, but since the door is closed, he had better give up the idea of eating. If flexible rates are truly better as alleged, why could not the statutes be amended? On the other hand, if there are good reasons for not changing the statutes, why should the author advocate flexible exchange rates in the first place? The reader is left to wonder.

ALPHA C. CHIANG

Denison University

Canada in a Changing World Economy. By HARRY G. JOHNSON. Toronto: University of Toronto Press, 1962. Pp. 62. Cdn. \$2.50.

In two Alan B. Plaunt Memorial Lectures delivered at Carleton University, Ottawa in February 1962, Professor Johnson informed his fellow Canadians of the failings of their recent economic policy with his customary forthrightness. The book contains illuminating and stimulating remarks on a great number of subjects, but only its outline can be drawn in a review. The first part describes contemporary changes in the world economy; the second part discusses Canada's position, her policies and what they might be in future.

To Johnson the fundamental change taking place in the world economy is the relative decline of North America caused by the rise of effective competition in manufacturing in Europe and Japan and by the spread of industrial production to other areas. The formation of the European Economic Community is a manifestation of the increasing power of Europe. The United States fostered European cooperation by its postwar policies and is now handicapped in stemming the movement to regional economic blocs by the weakness of her balance of payments caused by an inadequate international monetary system.

Turning to the Canadian situation, Johnson notes two problems: that of combatting economic stagnation and that of developing a trade policy adapted to new international arrangements. The first, vastly more important, is a "problem whose solution is fully within the competence of the Canadian government" (p. 33). By this Johnson means that an increase in demand would reduce unemployment, not that a simple cure for inadequate growth exists. In two brilliant pages he describes how unduly restrictive monetary policy in a country with a floating rate of exchange has manifestations which give rise to plausible, but fallacious, explanations for the depression. Because high rates of interest induce an inflow of capital and a high rate of exchange, inadequate demand for domestic output is blamed on foreign investment or foreign competition. The uneven incidence of a decline in demand leads to claims of structural maladjustments, and the earlier firing of less-skilled than more-skilled workers gives rise to claims that the cause of unemployment is an inadequately trained labor force.

It appears to this reviewer that past errors in Canadian monetary policy are the sole (and insufficient) justification for the abandonment of the floating rate of exchange for a fixed rate in June 1962. This will force Canada to maintain monetary conditions little different from those in the United States. But such a tie is desirable only if foreign monetary measures, taken as they are to affect foreign economic conditions, are more appropriate to Canadian conditions than the measures an unfettered Canadian monetary authority would take autonomously.

Johnson is less certain both of the goal and of the means of achieving it when he goes on to discuss growth in productivity. His chief recommendation is that the government should offset the retarding effect on growth of the size of its own operations, and of the consequent taxation, by budget surpluses to increase savings and low rates of interest to stimulate investment.

Turning to trade policy, Johnson calculates that the potential loss to Canada from European developments is less than generally believed and criticizes the Canadian government's "vain . . . and undignified effort to deter the British from seeking or gaining membership in the Common Market . . ." (p. 50). Of the policies Canada might attempt, Johnson believes that association with the Common Market is impossible of achievement, because of the European political purpose of EEC, and is in any event undesirable; and that a North Atlantic free-trade area is also impossible, because the United States would not discriminate against third countries. The formation of a customs union between Canada and the United States would bring economic gains, but the opportunity for its formation does not exist owing to the present U.S. desire to promote multilateralism. Canadian policy should support the present initiative of the United States in lowering tariffs so that Canada might obtain the benefits of greater specialization by exports and more efficient market structure for domestic industries.

In these lectures for a general audience, Johnson dramatizes the view that support of the present U.S. policy would represent a departure from the traditional Canadian policy of promoting trade with Europe, as a defense against

the United States, and of protecting domestic manufacturing industry. However, cooperation with the United States in liberalizing trade on a multilateral basis would also be following tradition and would be a revival of the leadership these countries gave in the early days of GATT before the present stagnation made men fearful.

HARRY C. EASTMAN

University of Toronto

Modern International Economics—A Balance of Payments Approach. By MAX J. WASSERMAN AND CHARLES W. HULTMAN. New York: Simmons-Boardman, 1962. Pp. x, 494. \$7.75.

It has been said that books constitute the greatest teaching machines ever invented. This volume is clearly a textbook whose pretensions to originality are limited to pedagogy. Whether it will prove to be a good teaching machine will depend upon what the teacher hopes to accomplish and his own skill in supplementing the book where it may fall short of course specifications. Its claims to pedagogical distinctiveness are that it is a "balance of payments approach," describes a *real* world, and treats theories and policies that are important and relevant *today*. This is another way of saying that the historical and theoretical aspects of the subject are minimal, emphasis is placed on contemporary problems, and description is included at the expense of analysis. Nevertheless, within the limits of its mission, the book is complete and well written. It should prove most useful to readers whose interest and background in economic theory are sketchy.

Though the jacket and the title page carry the subtitle "A Balance of Payments Approach," a careful reading will show this to be somewhat of a misnomer. There is included more than the usual formal and detailed description of the international accounts, but the balance of payments by no means serves as a unifying theme for the whole book. For example, Chapter 5, "Balance of Payments: Analysis of Surpluses and Deficits," treats gold and short-term asset and liability movements in accounting terms, not in terms of price disequilibrium or internal or external imbalance (though here, as in numerous other instances, the terms are introduced but an explanation of their significance is left to the instructor, or the reader's use of the bibliography). Then in Chapter 7, "Financing International Transactions: Monetary Systems," gold and foreign exchange standards are described, likewise without significant reference to the theory of equilibrium, but also with only the most superficial reference to the balance-of-payments analysis of Chapter 5. The treatment of the rate of exchange is simple and clear but makes almost no reference to the earlier balance-of-payments analysis.

The book is divided into seven parts and 26 chapters. The two chapters in Part I are introductory. The four chapters in Part II present a comprehensive description of the balance of payments. Part III on international payments on the whole is well done, though the reader is presumed to have had prior knowledge of financial instruments. The treatment and comparison of the Sterling Area and the Franc Zone in Chapter 10 are especially good. Part IV includes four chapters on "The Movement of Goods, Services, Uni-

lateral Transfers, and Capital" in which the terminology is that of the balance of payments but the method is traditionally descriptive, and basically not payments-oriented. Part V presents in two chapters "The Theory and Analysis of International Economics," almost as if theory is discrete and separable from the rest of the subject, and can be disposed of in a small but neat package. Part VI, "Foreign Economic Policies," is a series of six chapters primarily devoted to a descriptive inventory of policies and an analysis of their effects. In this section the authors disagree with the position that trade substitutes for factor movements tending thereby toward factor-price equalization, and no mention is made of the role of education in bringing various national labor forces toward parity as productive factors. In Chapter 21, partial equilibrium analysis is applied to the effects of trade restrictions, but the results are spotty since this method of analysis is not used uniformly throughout the chapter. Part VII, "International Economic Development and Cooperation," presents a good summary of the methods and obstacles to economic development, though again no reference is made to balance-of-payments analysis. The last three chapters on international agencies are comprehensive and useful.

Each chapter is followed by a list of questions suitable for short papers or to evoke discussion. Of considerable interest are the analytical bibliographies for most of the chapters. A brief description of the author's position or the coverage of the book is given for a wide variety of sources. Whether the space for this purpose is well used depends on whether students will be prompted to read more widely than their assignments require.

The book has manifest strengths which merit its careful consideration for courses in international trade whose orientation is toward description and policy.

SAMUEL E. BRADEN

Indiana University

Business Finance; Investment and Security Markets; Insurance

The Investment, Financing and Valuation of the Corporation. By MYRON J. GORDON. Homewood, Ill.: Richard D. Irwin, 1962. Pp. xiv, 256. \$6.50.

The book is concerned primarily with the development of a theory of stock pricing and the empirical testing of this theory with the ultimate objective of using the theory to determine those investment and financing policies which maximize the value of the firm's stock. Much of this material has been published by Gordon in various journal articles, but there is considerable that is new, and the book has the advantage of considering many interrelated problems in more detail than is possible in journal articles, and analyzing them all within a consistent framework. While the analysis is not always completely convincing, it is the best comprehensive discussion of these problems which this reviewer has seen.

Slightly more than half of the book is devoted to a presentation of Gordon's theoretical apparatus, including a discussion of the theoretical literature. The

remainder is devoted to a presentation of his empirical results and their implications for investment and financing decisions. Unfortunately there is no discussion of empirical work done by others.

The theory of stock pricing is based on the assumption that the value of a stock is the present value of the future dividends which will be declared on that stock. Gordon then considers, pretty much independently, the determination of the future dividend and the determination of the discount rate. The dividend stream depends upon the fraction of earnings paid out in dividends, the rate of earnings on new investment, the funds obtained from outside debt-financing as measured by the debt-equity ratio, and the funds obtained from outside equity-financing. In his empirical work, Gordon assumes that the dividend pay-out rate, the earnings rate, and the debt-equity ratio do not vary from year to year in the future, and that new equity-financing is the same proportion of book value each year. He discusses the theoretical possibility that the earnings rate on new investment depends upon the amount of investment, but this does not enter into the empirical work. He investigates empirically a model which ignores debt-financing and a model which considers debt-financing, and finds that the model with debt-financing fits the data better. The same procedure suggests that the inclusion of outside equity-financing is not worth while.

The discount rate depends upon the risk associated with the dividend stream, and risk depends upon the rate of growth of the dividend, corporate size, the variability of earnings, debt leverage, the liquidity of assets, the maturity structure of the debt, and the outside equity-financing rate. The last risk factor is dropped because outside equity-financing adds nothing to the empirical properties of the model, and the debt-maturity factor is dropped because it does not improve the fit of the model to the data. The other risk variables are found to be empirically significant. A risk factor for leverage which takes advantage of the Modigliani-Miller theorem¹ gives a better fit than one which does not take advantage of this theorem.

The empirical results are then used to test the sensitivity of share price to changes in the other variables, and to show how the firm can select its dividend pay-out rate and its debt-equity ratio so that the share price will be maximized. These are the only two variables in the model which can be determined by the firm, and they jointly determine the amount of investment which the firm will undertake, and the way in which this investment is financed. Gordon also shows how the firm could use this model to make its investment and financing decisions if it could determine the relationship between the rate of return on investment and the amount of investment.

The great strength of this book is that it presents a thoughtful discussion of virtually all of the factors which are important in stock valuation or investment decisions, and that it combines theoretical analysis with empirical testing of the models. It should prove useful to all students of these problems. Its principal weakness is that too much theoretical importance is attached to assumptions which are made for empirical purposes. For example, Gordon as-

¹ Franco Modigliani and M. H. Miller, "The Cost of Capital, Corporate Finance and the Theory of Investment," *Am. Econ. Rev.*, June 1958, 48, 261-97.

sumes that the firm's dividend pay-out ratio will remain unchanged forever. This assumption is made because the model requires that the dividend be predicted forever, and this seems to be the most reasonable assumption about future pay-out rates. It also works quite well empirically. It does not follow, however, that a firm which bases its investment decisions on this assumption will thereby maximize the value of its shares. This criticism, however, means only that while Gordon's work is important, there is still more to be done.

DIRAN BODENHORN

The Ohio State University

Business Organization; Managerial Economics; Marketing; Accounting

The Role of Anticipations and Plans in Economic Behavior and Their Use in Economic Analysis and Forecasting. By FRANCO MODIGLIANI AND KALMAN J. COHEN. Urbana: University of Illinois, 1961. Pp. 166. \$2.75.

This theoretical work offers a number of fruitful insights into the role and uses of anticipatory data in economics. It also should stimulate empirical research in "semicausal" forecasting—the authors' term for attempts to integrate anticipatory data and "causal" variables in prediction. It is therefore a valuable book, as might have been expected from the authors. My chief criticism is that the analysis is very formal and frequently too detached from empirical issues. Some of the theoretical findings seem to point toward lines of research that should be pursued in collecting and analyzing anticipations data. But the authors fail to use many of these opportunities to point the way for empirical research. Also, the analysis could have been enriched and clarified by more use of empirical examples from the literature (including some of Modigliani's findings).

Part I explores the role of anticipations and plans in entrepreneurial decision-making. In the Modigliani-Cohen analysis, the firm is concerned about the future insofar as any forthcoming development bears on its choice of decisions in the present. Any aspect of the future that would not influence the firm's current actions is irrelevant and can be ignored. Modigliani and Cohen discuss in detail the conditions under which future parameters are relevant or irrelevant, thereby indicating where a firm is likely to concentrate its efforts at forecasting and how far into the future the firm is likely to look ahead.

However, the analysis runs into a major paradox. The firm need never explicitly know what it is going to do tomorrow in order to make the best decisions today. It needs considerable information about the environment of tomorrow and beyond, but it can optimize its current actions without specific reference to its own proposed future behavior. As the authors clearly recognize, in their theoretical framework there is no point to planning!

Why firms do plan is treated briefly. Two reasons are offered: first, in many cases, an indication of probable optimal decisions for the future emerges from the process of making a current decision with no—or little—added cost. Even though the decision for future action is subject to change, the firm might as well grind out a tentative decision in formulating its current policies. Plan-

ning ahead then economizes on the frequency and costliness of decision-making. The other reason, the authors suggest, lies in the "coordinating function of the plan"—its use in transmitting to the various parts of an organization information which is relevant to their present actions. Planning is a method of calling signals to the members of a team.

These are interesting and stimulating observations, but they lie outside the algebraic core of the book. With additional work following these insights, the authors might have developed a theoretical formulation in which planning did emerge as a constructive economic activity. I believe that such a course would have brought them into a closer inspection of empirical knowledge concerning what actions firms do plan and how, in fact, they make use of their plans.

Part II discusses the uses that economists can make of anticipatory data. Its chief contribution lies in clarifying the relationship of anticipatory data and other economic variables in forecasting. The central analytical concept is the "realization function" which relates the difference between actual and planned actions to unforeseen developments in the environment. Planned actions are based on expectations about the state of the world. Actions diverge from plans because the expectations sometimes turn out to be incorrect. The actions for a given period are then determinate if one knows: (1) the planned actions, as recorded at a previous time; (2) the expectations about relevant variables outside the control of the firm for the interval between the time of planning and the time of action; (3) the actual course of these variables; and (4) the way the firm responds to surprises in these variables.

This list introduces traditional causal factors, along with plans and expectations, as necessary tools for forecasting. If surprises in orders, prices, or costs can lead to revisions in plans for capital outlays, then the forecaster must judge how the firm is likely to be surprised and how it will behave in light of such surprises. Thus Modigliani and Cohen establish the logical foundations for the principle that causal and anticipatory data are complementary inputs in forecasting.

One empirical issue that deserves exploration lies close to this analysis. Bias and other systematic patterns of error are apparent in certain intentions series (e.g., Commerce's recently-launched inventory survey). According to the Modigliani-Cohen framework, actions will diverge from plans only if firms are surprised. Systematic divergences should appear only if firms are biased forecasters of the variables outside their control, or if they respond asymmetrically to surprises in opposite directions. It would be interesting to examine the systematic errors in light of this analysis.

Analytical uses of anticipations data get equal weight with forecasting uses in the title of this book. But they get omitted from most of the text. The two passages (pp. 128-29, 151-52) in which analytical uses are discussed cannot do justice to the potential importance of this area or to the work of other investigators. Knowledge of the course of expectations and how they are formed can potentially contribute much to our understanding of economic behavior. It might teach us how to weigh the now imponderable factors of "confidence" and "business psychology" and to appraise their roles

as determinants of economic decisions. It might help to appraise the dynamics of responses to changes in economic conditions.

Since the authors have so little to say on these issues, they might well have dropped "Economic Analysis and" out of their 17-word title. Perhaps they may turn their attention to the analytical uses (and to some of the empirical issues) in future work.

ARTHUR M. OKUN

Yale University

An Inquiry into Some Models of Inventory Systems. By MARK ALFANDARY-ALEXANDER. Pittsburgh: University of Pittsburgh Press, 1962. Pp. vii, 108. \$7.00; paper, \$4.00.

There is now a large literature dealing with the theory of inventory management. Although the subject bristles with difficulties, some outstanding work has appeared. As Dorfman has remarked, however, inventory theory consists of a battery of techniques adapted to specific circumstances rather than a simple, generally applicable body of doctrine.¹

The brief volume reviewed here attacks the subject with the aid of simulation techniques. After a short summary of some characteristics of earlier work and methodological matters, the author proceeds to an investigation of four inventory policies. These were chosen on the grounds that they are commonly used in industry, that they are simple rules that have been proven optimal policies under many realistic sets of circumstances, and that some of their characteristics appear to be in question (p. 11). No information is presented regarding the relative frequency with which the various models or variants thereof are in use in industry.

The study concentrates on the commodity inventory problem under conditions of uncertainty independent of the production process. Demand and price are taken to be beyond the firm's control, and speculative demand for inventories is ignored. Demand in each period and delivery lag time are both assumed to be stochastic variables. Demand in each period represents a random drawing from an exponential distribution, delivery time from a normal distribution. The four policies include: a "multibin" policy (multibin rather than two-bin since orders may occur when earlier orders are still outstanding) with a fixed order size triggered when existing and previously ordered inventory is equal to or less than a reorder point, s ; an " (s, S) " policy with a variable order size equal to the discrepancy between the inventory and the level of replenished stock, S , also initiated by a decline in inventory to the reorder level, s ; a "base-stock" policy which is simply an (s, S) policy with $s = S = B$, where B is the base stock; and a "fixed-order cyclic" policy with a periodic ordering rule having no feedback adjustment. The models take account of holding cost, requisition cost, and shortage cost. With respect to the last, each model has two variants. In the one case, demand in excess of stock on hand is lost forever (impatient customers); in the other, any shortage is backlogged (patient customers). The author uses a "rationalized cost coefficient" in an effort to make his results as general as possible.

¹ R. Dorfman, "Operations Research," *Am. Econ. Rev.*, Sept. 1960, 50, 590.

The purpose of the study is twofold: to investigate the long-term expected costs for each model given various values of the parameters (such as costs) and decision variables (such as reorder point and order size), and to suggest an heuristic model for inventory decisions useful to actual firms. The former entailed computer simulation of many-period results (usually around 500 periods) for various combinations of values of the parameters and decision variables, and subsequent analysis of response surfaces to estimate optimal values of the decision variables. A comparison of the optimal results for the four policies indicates little basis for choosing among the first three, given the assumptions employed. The last is a distinctly higher-cost inventory system. A graphical portrayal of results occupies 35 pages of appendix.

The exposition could be improved substantially; e.g., no reference is made to the fact that the distribution function discussed on page 61 is a cumulative distribution function. Similar difficulties appear elsewhere. Though little use is made of mathematics, the development presupposes familiarity with the vocabulary and methods of inventory theory (and, on occasion, electric circuit theory). But these should not be barriers to most of those likely to make use of the study.

A work like this contains little of interest to economists not concerned with detailed analysis of the firm. This is not to say that economists should not have some minimum acquaintance with inventory theory and its problems.² Nor should this remark be interpreted as a criticism of work specifically oriented toward industrial management.

H. LAURENCE MILLER, JR.

University of California, Los Angeles

² As discussed, e.g., in the first two chapters of the recent book by K. J. Arrow, S. Karlin, and H. Scarf (*Studies in the Mathematical Theory of Inventory and Production*, Stanford 1958). This particular discussion has the virtue of simultaneously introducing the reader to the nature of inventory problems in general and to the close tie between this subject and the demand for money.

Industrial Organization; Government and Business; Industry Studies

Organization, Automation, and Society—The Scientific Revolution in Industry. By ROBERT A. BRADY. Berkeley: University of California Press, 1961. Pp. xiv, 481. \$8.50.

Thirty years ago, Professor Brady described the rationalization movement in German industry as a search for "ways and means of systematically introducing standardization, utilizing the fruits of cooperative research, promoting scientific management, and coordinating and integrating activities of entire industries" [2, p. xii]. Rationalization, Brady emphasized, was a revolutionary phenomenon. "Under its complete domination nothing would be left to chance, for it substitutes conscious control for automaticity, ordered discipline for caprice, systematically articulated plans for chance coordination. It represents the bold attempt to bring all phases of economically significant human activity under the direct management of the human agent" [2, p. 416]. *Durchrationalisierung* (permeation of rationalization) of all eco-

conomic activity and *Verwissenschaftlichung* (scientification) of all techniques and methods, wrote Brady, would transform economic organization under the aegis of "plan, order, system, foresight, control and rational guidance" [2, p. viii]. In essence, said Brady, *rationalization is planning*—and though the German movement was never able to match promise with fulfillment, it at least moved in the right direction.

Today, Brady is still fascinated by the character and implications of the scientific-technological revolution—what Veblen called "this concatenation of processes" under the impact of which "the modern industrial system at large bears the character of a comprehensive, balanced mechanical process" [5, p. 16]. In *Organization, Automation, and Society*, Brady attempts to comprehend this revolution and to address himself to what he regards as the dominant question of our time, viz., whether production can genuinely be "scientifically organized" [3, p. 387]. It is the best study of automation yet to be made. It is the scholarly, sensitive, and insightful product of a brilliant and imaginative intellect.

The new scientific-technological revolution—which differs as radically from its 18th century antecedent as the latter did from the handicraft era of the middle ages—has four general and interrelated aspects:

First is the chemical revolution in the materials foundation of industry. Second is the standards and specifications revolution in the criteria for selecting the best methods, processes, products, and the like. Third is the electronic and automation revolution in the processing methods of industry. And fourth is the revolution (at the moment, primarily atomic) in the systems of energy supply [3, p. 5].

The new mass production which Brady envisions as the outgrowth of this scientific-technological revolution has the following characteristics: (1) plants are automatic or near-automatic; (2) plant-agglutination and plant-scattering patterns are determined without respect to property lines or corporate divisions of ownership; (3) interplant flows are modeled upon the pattern of intraplant flows; (4) capacity and load factors approach the 100 per cent limit ("the never-quite-attainable ideal being production to rated capacity around the clock and 365 days in the year" [3, p. 399]); (5) all articles and their components are designed in accordance with rigorously formulated standards and specifications, drawn in keeping with physical-chemical characteristics and functional usefulness; and (6) all or nearly all costs—investment and operating alike—tend cumulatively to take on the character of overhead costs [3, p. 231].

To achieve this automated industrial system, the operation of related plants must be revised "*as though* the entire concert of such plants were (a) converted to an automation basis and then (b) proportioned in size, scheduled in production, and synchronized on a quasi-automatic basis" [3, p. 265]. Volume and timing between successive steps must be dovetailed; storage and inventory at any given point must be held to a minimum; materials flows and manufacturing schedules must be synchronized by automatic or quasi-automatic feed-back controls. In short, each specialized plant in the economy must be conceived "*as though* it were a single functioning unit re-

lated to the rest in somewhat the same way as the separate parts-producing units within the plant are interdependent at the assembly line" [3, p. 266].

The inner logic of the new order, says Brady, extends beyond the industrial sector. Under its imperatives, mining must be reorganized and "unitized" like gas and oil extraction, so that each deposit is exploited as a single production unit [3, pp. 145-57]. Rail, water, highway, and air transportation must be integrated as coordinate parts of a regional or national traffic system [3, pp. 267-95]. Power generation, transmission, and distribution must be unified on the widest possible regional and interregional basis (along TVA and Central Valley Project lines) with a coordinated utilization of an extraordinarily wide range of natural resources [3, pp. 296-325]. Telecommunication networks, wireless and wire alike, must be integrated in operation and equipment manufacture [3, pp. 361-86]. Scientific research must be reorganized, so that our present "pell-mell" effort in this field is replaced by national mobilization of resources and long-range planning.

Not only must a greater proportion of our research effort be devoted to fundamental or basic research, but the whole effort must be better organized and administered [3, pp. 72-107]. In agriculture—to illustrate the kind of "rethinking through" which Brady advocates—

. . . plans for production would differentiate land use in terms of basic meteorological and hydrological cycles, soil types, and topographic features; would adjust crop patterns and fertilization to maintain old or establish new ecological and soil-chemical balances; would consider farming as merely one of several multiple-purpose uses of water resources to be cooperatively developed within river valley profiles as a whole; would specialize land in crops within and among major producing areas in terms of the product mix demanded by society at large; would plan a size and scale of farm operations which approaches, with full mechanization and within the limits set by the agronomic sciences, the conditions of optimal economy in production [3, pp. 398-99].

In this kind of industrial society, obviously, the physical unit of reckoning is typically large and the time span of planning is long. In the extractive industries, the minimum unit is not the mine, but the deposit. In agriculture, it is not the family-sized farm, but the combination of meteorological, hydrological, topographical, and soil-type patterns. In water resources, it is not the single power-generating facility but an entire river profile system. In mass production, it is not the individual plant, but an industry fully integrated—forward and backward. Throughout, the pressures are multiplying to consider the minimum-sized unit for actual day-by-day management and operation as a mere operational unit in a larger frame of reference.

More clearly than in any previous rationalization movement,

. . . current plans for industrial reorganization are coming to focus on problems of size, proportioning, and process or product specialization of all plants in each industry; of location of these plants and their supplies with a view to elimination of cross-hauling; of specialization of traffic movements by most economical transport or combination of transport media; of industry-wide pooling of research, technical know-how,

and management information about products, markets, costs, and prices; of common promotion, development, and widening use of standards, grades, and specifications [3, p. 405].

In short, the sweep of the scientific-technical revolution is rapidly transcending the current framework in which problems of industrial organization and public policy are being discussed.

In the technocratic society envisioned by Brady, the conflict between freedom and order assumes new dimensions and crucial significance. The new technology requires facilities, simplification of procedures, organization and integration—"order"—on an unprecedented scale. The main thrust is to avoid anarchy through planning. At the same time, however, this goal may have to be purchased at a considerable price. To obtain "order" and to avoid "anarchy" is to face "the possibility, however remote, of authoritative direction and the erosion of individual initiative" [3, p. 390]. At its very best, the degree of centralization implicit in the new order may mean massive bureaucratization, internecine warfare between monopolistic power blocs, and excessive political interference. At its worst, it may lead to the perversion of science and technology toward the ends of war and the destruction of human life itself.

Even two decades ago, in discussing the comparative virtues of capitalism and socialism, Oskar Lange shrewdly recognized that the real danger of socialism was "not the impossibility of coping with the problem of allocation of resources," but rather the "*bureaucratization of economic life*" [4, p. 109]. This Weberian curse (from which capitalist societies are by no means immune) involves the risk of economic conservatism and entrepreneurial atrophy—the danger that the managerial class may not probe for better ways unless forced to do so by powers beyond its control. The bureaucratic mentality, as I have observed elsewhere [1, pp. 269, 274], tends to infest the socialist planner as well as the private monopolist. It transcends national boundaries and defies ideology. It is hostile to novelty. It is rigid. It is anti-experimental. It is addicted to the status quo. It is activated not so much by a desire for monopoly profits as for the quiet life. It seeks to insulate itself from the winds of change. Imagination, daring, and initiative are outside its lexicon of virtues. Its slogan is to let well enough alone.

Here is the nub of the problem. If Lange is right, if bureaucracy is indeed the great danger, then the goal of public policy must be to curtail this mortmain and *Kadavergehorsam* rather than to sanctify it with official anointment. The goal must be decentralization of authority, dispersion of the centers of initiative, autonomy for the seedlings of initiative. The objective must be to give the "market" greater play, because the greatest threat to encrusted bureaucracy is the challenge of "competition" (governmental or private), the existence of a yardstick by which to measure performance, the presence of alternatives to centralized decision-making. "Competition" (in the sense of exogenous control forces) is what the bureaucrat fears most, because it compels him to submit to the "public will." It enables him to survive and prosper only by being the public's servant, and not its master.

Brady, of course, is too sophisticated a scholar to ignore these problems of the brave new technocracy. He is fully aware of the Orwellian dangers in-

herent in the scientific-technological society. "Bureaucracy," he wrote long ago,

is coterminous with settled, patterned, ritualized behavior. It does not arise from ill will, but from behavior which has become routinized and frozen to its mold. As found in industry and commerce, bureaucracy represents the dead hand of the past. . . . It represents human inertia coupled with custom and taboo and frozen into a routine of perfunctory performance of formal duties. It is to be found in all human behavior; it becomes more marked, more noticeable, more decisive, and more dangerous the older and the more complex the institutional setting in which it is found [2, pp. 40-41].

In his latest book, Brady elaborates this insight, recognizing that massive bureaucratization may well nullify the enormous productive potential of which the newly emerging industrial order seems capable. Bureaucratization in large-scale organizations, he says, reflects "the laudable desire to divide, specialize, train, regularize (i.e., subject to rational, impartial rules), and coordinate duties, functions, and responsibilities" [3, p. 415]. On the other hand, it threatens to strangulate economic activity, like the serpents entwining Laocöon. Inevitably expanding with the growth of giant economic organisms, bureaucracy has become a force, especially in countries like the Soviet Union, which increases in strength and ingenuity with every effort to cut through its endless coils and Parkinsonian complexity. It threatens to become a dead weight on modern industrialism—much like the courtly retinues of a bygone age which attended the whims of the wastrel nobility while almost eating them out of house and home.

Thus, Brady would be the first to admit that the rational organization and productive potential, made possible by the inner logic of the new industrial revolution, may well be frustrated by pervasive bureaucratization. He recognizes that, at all levels, the challenge is to "combine coordination with individual initiative, organization with autonomy, effective interlacing of independent activities with flexibility and the need for change" [3, p. x]. In fact, he indicates that *Organization, Automation, and Society* was to be but the first volume of a trilogy—to be followed by a study of "bureaucracy, considered as the 'problem of flexible organization,' as it might be designed to manage the type of emerging industrial order outlined here" and by a final study of "the types of policy which might (1) make most rational use of the new industrial apparatus, while (2) surmounting the dangers of bureaucratic arteriosclerosis, and (3) yet be most consistent with both democratic institutions and the values of individual personality" [3, p. 428 n.].

Would that Brady, or someone of his stature, intellect, and sensitivity, might devote himself to this unfinished task.

WALTER ADAMS

Michigan State University

REFERENCES

1. W. ADAMS, "Consumer Needs and Consumer Sovereignty in the American Economy," *Jour. Bus.* July 1962, 35, 264-77.

2. R. A. BRADY, *The Rationalization Movement in German Industry*. New York 1933.
3. R. A. BRADY, *Organization, Automation, and Society: The Scientific Revolution in Industry*. Berkeley and Los Angeles 1961.
4. O. LANGE AND F. M. TAYLOR, *On the Economic Theory of Socialism*. Minneapolis 1938.
5. T. VEBLÉN, *The Theory of Business Enterprise*. New York 1904.

The Economics of the Electrical Machinery Industry. By JULES BACKMAN. New York: New York University Press, 1962. Pp. xxiii, 374. \$10.00.

The Gentlemen Conspirators: The Story of the Price-Fixers in the Electrical Industry. By JOHN G. FULLER. New York: Grove Press, 1962. Pp. 224. \$3.95.

John Maynard Keynes, in a book of 384 pages, dismissed the "classical" economists in 18 lines, but at least took 19 more pages to explain himself. Professor Backman, in a volume of 374 pages, has dismissed the great price-fixing cases of 1960 with 3 pages (pp. 135-38). Neither the "classicists" nor the cases should be treated so cavalierly.

There is, however, much of value in this "industry study." The 323 pages of text contain 39 text tables and 22 charts. In the appendices are 32 additional tables, more detailed and basic than those of the text. One finds no less than 600 footnotes, many containing multiple references. The work was obviously a formidable task of research, writing, and editing, and Backman was fortunate in apparently having the substantial aid of his staff and others: Schwartzman of the New School, Blum of Michigan State, Gomez, Guilfoil, and Levine of New York University.

This study of the electrical machinery industry makes use of most of the concepts and raises most of the questions appropriate to an industry study: the size and significance of the industry in the total economy, growth and financing of the firms, the structure of the industry, the nature of competition, the "performance" of the firms judged by the usual criteria (but not much on "behavior"), pricing policies and practices, productivity, profit rates, and wage patterns. There are two chapters on the labor relations of the industry, centering chiefly on General Electric and Westinghouse, including a discussion of wage rates, benefit plans, and labor costs. A chapter is devoted to the impact of foreign competition, and a final chapter sums up the whole in glowing (incandescent?) terms.

In all, the result is unsatisfactory. It probably is just not possible to write a critically objective book when one builds it (p. xxii) on the base of a report written for one of the "private special interests" with which the book is concerned (Westinghouse Electric Corporation). From Backman one gets these impressions: the industry is concentrated, but not much more so than many others, and concentration would be no index of monopoly anyway even if concentration ratios were any good, which they aren't; there are substantial barriers to the entry of new firms but this does not prevent vigorous competition, as witness the "highly competitive automobile industry" (p. 73); there are no

precise yardsticks with which to measure the effectiveness of competition (p. 58), so why get excited about it; nor with which to evaluate the "adequacy" of profit margins (p. 273), so who can say that they may be larger than "necessary."

Yet more: prices have risen more than for industry generally over the post-war period but not more than is justified by rising wages; productivity per production man-hour, meanwhile, has risen faster than in most other manufacturing industries, and the ratio of production workers to total employees has fallen sharply; wage rates are almost identical to those of industry generally and have risen no faster. (Try reconciling these facts on your G.E. computer!) And further: depreciation charges have been inadequate, net worth is understated, and profits are overstated (p. 259 and following). But here the author is only restating the chronic complaints of the business community and begins to depart from the kind of original conclusions illustrated above. The last paragraph on page 277 summarizes the preconceptions he has failed to validate and draws out a final grand generalization that does not emerge from the evidence.

To be more specific, Backman believes that if some authorities (Kaysen and Turner) find a concentration ratio of 33 per cent for the eight largest firms in the industry and another finds a ratio of 70 per cent (Bain), the range is so wide as to have *no* meaning (p. 93). But are not both these ratios indicative of a concentrated market structure? Backman points to the shifting of positions in the "big four" as evidence of shortcomings in concentration ratios (p. 97); but does it matter to the buyer if Westinghouse supplants G.E. in a product line if he can secure the product only from one of these two? The author states that little of the growth of the major firms was attributable to mergers (p. 99); but by 1892 the mergers of the 1880's had resulted in two giants who held 90 per cent of the market (what was there left to merge?).

The analysis of company and plant concentration is faulty (p. 105). If cost per unit is fairly constant over a wide range of *plant* sizes, more firms with more plants are preferable to fewer firms and plants and technological requirements do not explain concentration. Backman cites the top position held by the industry in research and development expenditures, but is this necessarily "good"? Unit labor costs rose only 6.3 per cent in the eleven years 1947-58 but Backman calls this a "sharp rise in unit labor costs . . . wage inflation" (p. 246). His discussion of the function of profits simply reflects confusion (p. 251 and following).

The disdainful neglect of the great price-fixing conspiracies is, of course, the chief fault to be found with the book. But with all its sins of omission and commission, the work of Backman and his associates provides a considerable volume of source material for those interested in this specific industry and, if the text is read with tongue in cheek, those who quote from the work may not be caught with foot in mouth.

Those who followed the developments in the electrical manufacturing industry as reported in the entertainment, obituary, comic, and, occasionally, the financial pages of the newspapers, beginning with (at least) the award-

ing of turbine contracts by TVA to foreign producers in 1959 and on through the grand-jury investigations and indictments, the pleadings, the sentencing in February of 1961 and the subsequent hearings of the Kefauver Committee, will find nothing new in the Fuller book.

This well-written little volume, full of adjectives appropriate to the muck he is raking, is worth reading for those who first were made aware of the developments by the headlines of February 1961. It may very well be substituted for Chapter 5 of Backman's study: "Price Policies and Price Practices," and, being in the narrative form, may take no longer to read. Fuller is properly exercised by and recognizes the deep significance for the viability of the market economy of price-fixing, market-sharing, bid-rigging and all the rest, and makes suitable recommendations for public policies. We need more angry men.

NORMAN A. MERCER

Union College

Die Konzentration in der Wirtschaft. Verhandlungen auf der Tagung des Vereins für Sozialpolitik, Gesellschaft für Wirtschafts- und Sozialwissenschaften in Bad Kissingen 1960. Edited by FRITZ NEUMARK. Schriften des Vereins für Sozialpolitik, Gesellschaft für Wirtschafts- und Sozialwissenschaften, N.S. Vol. 22. Berlin: Duncker & Humblot, 1961. Pp. 395. DM 36.60.

This volume represents the proceedings of the 1960 meeting of the Verein für Sozialpolitik. It contains five major papers, five brief papers on special issues, and a round-table conference on the measurement of concentration. The major papers deal with: the sociological aspects of concentration (Edgar Salin); concentration and the firm (Karl Hax); concentration and competition (J. H. Müller); causes of and remedies for concentration of wealth (Carl Föhl); concentration and social policy (Hans Achinger). The special papers deal with: growth and concentration (Karl Brandt); technological concentration (Waldemar Wittmann); concentration and fiscal policy (Heinz Haller); integration and concentration (Reinhold Henzler); concentration and adjustment to changing market conditions (Theodor Wessels). Each paper is followed by a discussion. The participants in the round-table conference were: M. A. Adelman; J. M. Blair; Karl Brandt; Gerhard Fürst; Hans Guth; P. E. Hart; Heinz König; Jürg Niehans; Günter Ollenburg; Gideon Rosenbluth. The contributions of Adelman, Blair, Hart, and Rosenbluth are in English; all others are in German, the language of the conference.

The reviewer of an anthological volume cannot be expert in all or even in most of the areas covered, and cannot summarize, let alone discuss, every contribution in the space available to him. In purpose this volume is comparable to *Business Concentration and Price Policy* (A Conference of the Universities-National Bureau Committee for Economic Research, Princeton 1955). The German volume covers more ground than the U.S. volume. The concept of concentration is here broadened so as to include concentration of personal wealth (Föhl) and of power within the firm (Hax). Moreover, the contributions consider, in addition to the economic aspects, also the socio-

logical, historical, and to some extent ethical aspects of concentration. On the other hand, with the notable exception of the round-table conference on measurement, the treatment is on the whole less technical than in the U.S. volume.

Previous to the meeting, three volumes of monographs on concentration had been published on: (1) the present degree of concentration; (2) causes of concentration; and (3) the effects of and the problems of concentration. Apparently the papers presented at the meeting are to some not well-defined extent based on these materials. This presents certain difficulties. Aside from three statistical tables—the gainfully employed population in 1958; the income distribution in 1958; and the formation of wealth from 1950 to 1959; all for West Germany (pp. 193-95)—little empirical evidence is explicitly given in support of the hypotheses advanced by the participants. Throughout the volume there are frequent references to the *Materialbände*, but mostly to the volumes in general rather than to specific information. Equally casual reference is also made to U.S. empirical evidence.

The contributions of Salin and Föhl represent as it were the two poles of the discussion, not only because they reach opposite conclusions but also because much of the rest of the volume is concerned with the elaboration of ideas contained in these two papers. Salin argues that concentration is not only inevitable, but that increased concentration is necessary if the free economies of the West are to be and to remain as efficient as the growing economies of the East. Föhl feels that the concentration of wealth which is the basis of business concentration can be efficiently controlled in a free economy. He agrees that the free enterprise system offers the opportunities for concentration of wealth and economic power. Essentially, however, these opportunities are exploited by individuals who, while intelligent and able, are at the same time obsessed with greed for wealth and power. Föhl suggests that these individuals should be distinguished from the creative enterpriser (p. 168). Since he sees in the concentration of incomes the main source of the concentration of wealth, he proposes a very complicated system of fiscal measures by which the incomes of wage-earners should be increased and the resulting increments channeled into savings. Thus the wage-earners would become owners of wealth and both the distribution of incomes and of wealth would become more equal. Throughout the argument Föhl apparently assumes a marginal propensity to consume which declines rapidly with increasing income (e.g., p. 164).

All the contributors who deal with it at all consider self-financing to be one of the most potent sources of concentration. Consistent with his general position, Salin welcomes self-financing (pp. 20, 21). Hax sees in it a source of the superiority of the large enterprise (p. 88). Föhl (p. 185) and Haller (pp. 294, 296) propose fiscal measures to restrict self-financing. In contrast to this position, John Lintner and J. K. Butters in their contribution to *Business Concentration and Price Policy* (Effects of Taxes on Concentration), submit empirical evidence to the effect that self-financing, at least in the United States, is most important in and for the small firm and thus counteracts concentration. It is therefore regrettable that the German authors do not

refer to the empirical evidence on which their reasoning is based and thus leave the reader with the impression that at least some of it is of an a priori nature.

This reviewer is not qualified to pass judgment on the discussion of the technical problems of measuring concentration. On the whole, this discussion seems to have aimed at reviewing the present state of affairs rather than at making new contributions. As a review of the available measures and of their properties, applications, and limitations, this last part of the volume is of very real value.

The U.S. reader looking in this volume for new contributions to the economic theory of concentration and of market behavior will be disappointed. On the other hand, the diversity of approach and the inclusion of many aspects usually neglected in narrowly theoretical analyses make these essays rewarding reading. At the very least, they offer an excellent survey of current German thinking on concentration.

EMILE GRUNBERG

University of Akron

Land Economics; Agricultural Economics; Economic Geography; Housing

Design of Water-Resource Systems—New Techniques for Relating Economic Objectives, Engineering Analysis, and Governmental Planning. By ARTHUR MAASS, M. M. HUFSCMIDT, AND OTHERS. Cambridge: Harvard University Press, 1962. Pp. xviii, 620. \$12.50.

Here is the long-awaited product of the Harvard Water Program. Financed by generous grants from the Rockefeller Foundation and by support from public water agencies, an interdisciplinary group of Harvard faculty members has conducted seminars and research over a five-year period dealing with the complex questions of design and operation of water resource systems. The program has attempted to integrate economic, engineering and governmental analysis and to devise new techniques for planning multipurpose, multi-unit water systems. Primary concern has been with methodology for design criteria, programs, and evaluation. The results, as exhibited by this volume, clearly indicate that these efforts were not wholly successful. Nevertheless, this study should be viewed as a substantial achievement in the methodology of system design with useful applications much beyond the confines of water resource systems.

Actually, the book is not a cohesive product. It combines two separate types of material. On the one hand, it contains a series of essays, each rather brilliant and quite self-contained; on the other hand, many of the chapters constitute interesting research reports of a "how we did it" nature. The multiple, interdisciplinary authorship has given the book a great deal of breadth but also a certain amount of unevenness in level of analysis and range of subject matter. For example, one chapter contains over sixty pages of detailed programming notation, in "cook-book" fashion, for a high-speed digital computer; yet the entire section devoted to the political process and govern-

mental factors and their influence on system design is less than forty pages in length. Because the design problem here assumes, for the most part, a public planning process it might have been desirable to have expanded the treatment of governmental structure and to have placed computer programming instructions in an appendix.

Designs of water systems in this study are largely restricted to systems and techniques for manipulating physical structures for handling water flowing in surface channels. Operation of ground water systems, problems of water quality, re-use and recirculation of water, and nonstructural alternatives such as flood-plain zoning are among a number of aspects of water management that are not examined. The question of pricing policy for water resources is passed over because "potential system revenues play no part in ranking designs in terms of efficiency." Instead, revenues are considered "simply as transfers of income from direct beneficiaries to the nation at large" (p. 38). The role of prices in promoting allocative efficiency is thus underplayed. Because of this it is strange that alternative rationing devices were not examined.

Robert Dorfman and Stephen A. Marglin each contribute two essays which will be of general interest to economists. In an early chapter Dorfman provides a succinct review of production theory, net benefit functions and decision theory. Some readers may get a chuckle out of his conclusion that "the problem of uncertainty is clouded by uncertainty" (p. 158). I suspect that Dorfman has made an important pioneering contribution in his second essay where he applies mathematical programming to problems of increasing complexity in preliminary stages of design for water projects. A three-season example with uncertainty is reduced to a standard linear programming problem involving sixty constraints and the system is simulated for a fifty-year period. Apparently, such simplified models can serve as a basis for more elaborate simulation analysis.

Marglin attempts to show how the design of specific water systems can take into account the twin objectives of efficiency and income redistribution. Methods of describing efficiency in terms of income redistribution constraints (and vice versa) are handled with considerable ingenuity. Marglin even sets forth the concept of a redistribution interest rate, which could well be negative indicating that the efficiency value of redistribution benefits increases with time. Although the Lagrangian multipliers and shadow prices derived are rather straight forward, there is much left unsaid or simply assumed about the whole range of philosophical considerations (and political implementation) of the twin objectives. Much of the neatness of the analytical solutions is also based upon such a restriction of the scale of redistribution that the general structure of price ratios is not appreciably affected. If the scale of income redistribution were large, it is not at all clear what would be meant by efficiency losses as consequence parameters.

In another chapter, Marglin develops his own concept of a social rate of interest based upon the hypothesis that there is a large degree of generalized concern on the part of individuals for future generations (in the abstract) that cannot be satisfied by the market mechanism. This psychic preference,

he argues, can be satisfied only through collective coercion to increase the rate of public investment. Some of this reasoning is plausible but unsupported by empirical evidence; some of it appears to be defective. This section of the book will cause many readers to choose up sides. In the case of capital rationing, Marglin proposes evaluation of public investment at the social rate of interest coupled with the use of a cut-off benefit-cost ratio above unity which would reflect the opportunity costs (reinvestment of the throw-off) of *all* investment, public and private. Marglin, therefore, is not guilty of committing the crude error that plagues many other proponents of the social rate of discount; his formulation clearly takes into account the marginal productivity of private and public investment assumed to be displaced by the particular public project under consideration. Furthermore, these opportunity costs are automatically converted to a common time-stream basis so that use of the initial low discount rate does not influence the ranking of alternatives possessing varying time streams. If consistently followed, Marglin's formulation would lead to the same ranking of projects that would obtain if one were to discount by the marginal productivity of capital in the first place. Special attention is also given to the dynamics of development where postponement of construction will often increase the present value of net benefits.

Probably the most important contribution of the Harvard Water Program is the development and application of two techniques of system design—simulation of a simplified river basin system on a high-speed digital computer and the development of mathematical models for river systems. The chapters describing these techniques are exciting and suggestive, not just for water systems but for systems analysis in general. These two techniques were used in planning the design of a simplified river basin system containing twelve design variables. With the aid of computers, simulation models were designed by Harold A. Thomas and Myron B. Fiering to synthesize a record of 510 years of stream flow. Flow-distribution parameters for cross-correlation of synthesized flows were established by use of bivariate linear-regression models. Because the economic design period for the system was assumed to be 50 years, the 510-year period, allowing 10 years for a "warm-up," permitted use of 10 hydrographs. The variation in the ten sets of results offered a more reliable estimate of expected net benefits than could be expected from estimates based upon actual hydrology.

Mathematical models of two types are presented in the book. Both employ data derived from the simplified river system and both use linear programming techniques. One model is called "multistrukture" (developed by Dorfman) and the other is titled "stochastic sequential" (developed by Thomas and Watermeyer). The basic difference lies in their handling of the stochastic component of stream-flow. The stochastic sequential model can optimize only for output and operating procedure. Choice of reservoir size must be made by sampling techniques. The multistrukture model optimizes for all three variables in combination, but it can not handle overyear storage or linkages between segments of the system over successive time periods.

To Arthur Maass fell the concluding task of relating system design to the

political process. The result is that Maass, as did most of the other authors before him, wrote an essay which is instructive and well-taken but not particularly integrated with what has gone on before. Maass sets up a model of a modern democratic state and then proceeds to show that public water planning in the United States violates parts of the model. What this might mean if one were not to accept the particular model is not altogether clear. Maass then closes with some very interesting observations regarding art of system design for large river systems. He points out that techniques proposed in the book cannot be intensively applied to very large river systems such as the Mississippi River. This matter might well have been taken up in extensive fashion much earlier in the book (rather than waiting until seven pages before the end). As a solution to the large river basin case, Maass proposes the techniques of "skeletonizing" and segmentation, i.e., conceptually aggregating related structures on tributaries or viewing segments as separate units and then linking them together. Along with this proposal is the warning, however, "that we do not have an adequate definition of a major segment; the data necessary to define it have never been assembled" (p. 599).

All of this means that the simplified river basin is really simple and that the techniques set forth in this volume, powerful as they seem to be, are still in their infancy.

JEROME W. MILLIMAN

Resources for the Future, Inc.
and *Indiana University*

Economic Redevelopment in Bituminous Coal: The Special Case of Technological Advance in United States Coal Mines, 1930-1960. By C. L. CHRISTENSON. Cambridge, Mass.: Harvard University Press, 1962. Pp. xxi, 312. \$7.50.

To judge from the accounts in such secondary sources as undergraduate textbooks, the image persists among academic economists that the bituminous coal industry of today is little different in structure and market behavior from what it was twenty, thirty, or even forty years ago. In the 1960's as in the 1920's and 1930's, that is to say, it is held that the industry is confronted with shrinking markets, persisting excess capacity, a lagging rate of technological advance, and periodic outbreaks of "destructive" price competition, among other things. It is said to be, in a word, "sick."

Among the handful of us who have examined this image at first hand in the period since the second World War, the suspicion has grown that it is badly distorted. Stated affirmatively, we have individually and severally suspected that the industry is well-launched upon a process of redevelopment, one which promises to result in significant changes in its structure, and in the conduct and performance of its firms. This opinion, not heretofore put to a thoroughgoing test, has now been strongly confirmed by one of the industry's leading scholars, C. L. Christenson of Indiana University.

Christenson's main objective, his point of departure for the volume under review, is to "measure the amount of [technological] change, identify its location, and determine the character of the social cost involved in the achieve-

ment" (p. 2). But to get at these matters, he finds it both advisable and necessary to inquire into a variety of other issues, among them (a) the present and prospective role of bituminous coal in world economic development, (b) the structure of the United States coal industry, (c) recent changes in coal consumption patterns and their impact upon the industry's structure, the operation of mines, the boundaries of bituminous submarkets, and the timing of consumption, (d) the relationship between total and per-mine productivity, on one hand, and wage differentials, on the other, (e) trends in employment and earnings of labor by geographic location, size and type (surface or underground) of mine, and (f) the factors promoting technological change.

So varied are the relationships which Christenson explores, so extensive are the data which he brings to bear, and—unhappily—so frequently does he fail to make clear the links between one point and another, that it is well-nigh impossible cogently to summarize his arguments and conclusions. But these of the points he makes certainly deserve brief mention:

1. Bituminous coal, particularly that stored in the generous reserves of the United States, has an important part to play in satisfying the rising world demand for fuel. Both in absolute and relative terms there is a good possibility that its share of the market will rise over time. But, "To achieve and to maintain a position of increasing responsibility for the spread of industrialism in the Western world the bituminous coal industry of the United States will have to rely upon continuing improvements in mining, transportation and in the consumer's use of its product to match the performance of other fuels" (p. 30).

2. "So far as the bituminous coal industry is concerned, its structure is compellingly determined by geology" (p. 31). This is mainly to say that the location and thickness of coal seams, and the quality of the product profoundly affect not only the costs of mining but also the conditions of entry into the industry, size of mines and mining establishments, character of ownership, and financial patterns, among other things. Central to this generalization is what Christenson terms the process of "discriminating selection," by which he means that coal-mine operators pick and choose, according to their respective market objectives, among the many types and qualities of bituminous and the many degrees of seam thickness which are available. He finds, to cite one example, that the "integrated" or "captive" mines, which are able to maintain more continuous mining operations than their commercially-oriented counterparts, tend to operate in thick-seam locations; and the evidence indicates that the thicker the seam, the greater (by and large) is the average daily tonnage per mine, the larger the number of mine operating days per year, and the greater the annual tonnage per mine.

3. As compared with the situation twenty and more years ago, the pattern of coal consumption in the United States has changed markedly. One result of the decline in use of bituminous for home and commercial heating and the rise in its use by electric utilities and industrial consumers has been a marked reduction in seasonal fluctuations in coal demand. Another implication of the realignment of consumption patterns is that, because the utilities tend for various reasons to buy the bulk of their coal from multi-unit min-

ing companies, they are promoting an evolutionary shift in market structure toward ever-fewer and ever-larger mining firms. More important yet, Christenson finds considerable evidence that coal is increasingly being sold in a network of sub-markets, each characterized by a differentiated product, price and wage differentials, and barriers to entry by new firms.

4. Although some thin-seam mines have been mechanized, the rate of technological change appears to vary directly with the thickness of the coal seam. Again, in other words, geological factors are of prime importance in the redevelopment of the industry.

5. Despite industry-wide bargaining, there are differentials throughout the industry in both wage rates and average hourly wages. The differentials appear to be very closely related to variations in productivity (measured both in physical and value terms), variations which themselves stem chiefly from geological factors.

6. Though wages have risen substantially in the postwar period, labor cost as a percentage of mine-realization price has been falling. This is a result largely of productivity increases associated with mechanization, which has been prompted in part by changes in the level and the structure of wages—notably the adoption by the industry of a welfare plan for miners financed by a flat-rate royalty on output. It is equally noteworthy that rising productivity is closely associated with declining employment in the industry.

7. Firms mechanize principally in order (a) better to compete with sellers of substitute fuels, (b) better to compete with other coal mines enjoying lower transportation costs to the relevant markets, and/or (c) better to compete with mines working seams of greater thickness and of higher-quality coal. Pressure exerted by the miners' union is acknowledged to be of some importance too—although on this point Christenson is ambiguous.

8. The major social cost of coal's economic redevelopment is a decline in employment which in too many of the nation's mining regions has not been offset by alternative employment opportunities.

As was suggested at the outset of this review, little new ground is broken in this book. But it is still an important piece of work, not only because it weaves together a vast number of strands spun (in whole or part) by other researchers but also because it skillfully picks up numerous previously dropped stitches. It is not, however, without flaws, chief among which is that the logic is too often obscure and the language too often turgid. The luster of Christenson's scholarship is, in other words, dulled by his expository deficiencies.

MORTON S. BARATZ

Bryn Mawr College

Khozraschet v kolkhovakh (Economic Accounting in Collective Farms). By N. P. SOBOLEV. Moscow: State Publishing House for Agricultural Literature, Journals and Posters, 1961. Pp. 224.

Not so long ago, the existence of costs in collective farm production was denied by Soviet economists. According to the 1961 program of the Communist Party of the Soviet Union, economic or cost accounting is to form the basis of all productive activity of every such farm. In the meantime, many

though not all institutional obstacles to the introduction of this form of "socialist management" (the multiple system of farm prices, payments in kind to various state institutions) have been removed in the drive to increase the level as well as the efficiency of Soviet farm output.

The author of the volume, which is based primarily on practices adopted by four collective farms located in the central black-soil area, aims above all at wide dissemination of practical experience acquired in this rather complex field. Roughly one-half of the book is devoted to the application of cost accounting within the collective farm itself, i.e., in its operational subdivisions, such as complex brigades, field brigades and livestock farms. It is only natural that this should be so, since the complexities of collective farm management are growing directly with its size as a result of continuing mergers; furthermore, the majority of the farms have as yet failed to introduce an internal system of economic accounting. At the same time little is said about the operation of the collective farm, as such, on the basis of economic accounting. That, too, is not surprising: a *khozraschet* enterprise is assumed to cover its expenditures by its income, while losses on the collective farm are borne by its members.

Sobolev discusses extensively the various ways of setting up cost accounting targets for the operational subdivisions of the collective farms. At first he appears to be begging some fundamental problems of valuation in the calculation of farm production costs: alternative methods of pricing labor inputs, productive expenditures in kind, and distribution of products to farm members are merely listed (p. 27). Although he finally tackles them at length (pp. 95-115), the results are far from satisfactory. The author appears to favor the valuation of labor inputs not in terms of average state farm wage rates, but rather in terms of actual expenditures for labor incurred by the farm. It might be useful here to indicate the order of magnitude of the difference between the alternative methods: in 1959-60, a collective farm labor day (*trudoden*) in the Tatar autonomous republic, priced at state farm wage rates, was given a value of 17 (old) rubles. Actual collective farm payments were 9.48 rubles in 1959 and 11.49 rubles in 1960. This, however, is not the main issue. Since collective farm labor is still rewarded in the form of residual shares, the advocated procedure may lead (and in some instances has indeed led) to rather paradoxical results. Thus, a rise in the labor payments resulting from a *decrease* in real labor expenditures per unit of output may well show up in the accounts as an *increase* in the production cost of a given unit of output.

Sobolev's views on this matter appear to be inconsistent with his preference for the valuation of production expenditures in kind. In this connection, he suggests the use of production costs rather than the state purchase prices (a procedure advocated by other Soviet economists). Otherwise, we are told, a reduction in the cost of producing "feed would not be reflected in the [level of] production costs of animal products" (p. 98).

The problems raised here are truly basic: as long as collective farms continue to reward labor in the customary manner, the correct valuation of labor inputs will remain a difficult and elusive problem. This is undoubtedly a

partial explanation of the recent drive to introduce fixed, wage-like, labor payments in the collective farm sector. In any event, the thorny valuation issues readily explain the position of some Soviet economists who maintain (correctly in our view) that in such conditions it is impossible to introduce the full system of economic accounting and that only some of its elements may be brought to bear on the problem of efficiency of production on the collective farms.

Since the use of state farm wage rates to value collective farm labor inputs is not without its own pitfalls, it may well be that a system of double book-keeping is in order here, with one calculation using state farm wage rates to be used at the collective farm level, and another using actual collective farm labor payments at the brigade or intrafarm level. A veiled hint to this effect appears on page 97. It should also be noted that in some instances it might be necessary to evaluate the performance of a brigade in terms of planned rather than actual labor-day values; otherwise the economy of real labor inputs in the brigade might again be reflected in the accounts as an excessive use of labor measured in money terms.

In view of the fact that the economic use of farm capital and the establishment of norms for the use of the capital factor are listed as the major direction for the future development of economic accounting on the collective farms, it is not quite clear why the author believes it unnecessary to include amortization norms among the targets listed for the various brigades (p. 89).

About a quarter of the book is devoted to the problem of rewarding farm members for the achievement (or overfulfillment) of cost accounting targets. In the present state of affairs, Sobolev favors a division of the total "wage fund" of the collective farm into three categories: a basic labor payment fund, a fund of supplementary payments for fulfillment of "especially important tasks" and for achievement of high quality of output (about 10 per cent of the total), and a fund of material incentives for achievement of cost accounting targets. Although he is not clear as to the relative magnitude of the last category, it appears from his discussion of the prevailing practices that it could amount to as little as 15 and as much as 40 per cent of the total wage fund. These sums should be distributed according to results revealed by the indicator of lowered production costs. But here (as elsewhere in the book) the author does not rule out the use of more primitive indicators (net income per labor day, gross output per labor day) as long as the farm is unable to employ a more sophisticated system of cost accounting.

Clarity of presentation is not one of Sobolev's virtues, and he received little help from his editors in this respect. A less sparse use of subtitles and separation of his conclusions from the illustrative material would have made the book more useful to the harassed collective farm chairmen, planners, economists and accountants.

To the Western specialist, the book includes rewarding bits of information on Soviet agriculture generally. For example, it is gratifying to see a confirmation of our deductions that collective farm members "usually exert a strong pressure" on farm planners to secure an equitable distribution of such crops as sugar beets among the various brigades (p. 71). Farmers directly partici-

pating in the production of this crop receive large quantities of sugar at a privileged price of .38 rubles per kilogram, as compared to the retail price of slightly over 1 ruble a kilogram. Similarly, it is useful to know that purchases of farm machinery by collective farms in 1958 occurred in a somewhat haphazard way and led to uneven distribution of tractors between farms (in the Voronezh oblast, some farms acquired one "accounting," or 15 HP, tractor per 150 hectares of arable land, while others purchased a similar tractor for 218 hectares of arable land).

JERZY F. KARCZ

*University of California
Santa Barbara*

The Economics of Subsidizing Agriculture: A Study of British Policy. By GAVIN McCRONE. Toronto: University of Toronto Press, 1962. Pp. 189. \$3.50.

The coverage of this book is considerably broader than the title implies. While its title might cause one to expect a more technical analysis of the effect of agricultural subsidies on supply, distribution of costs, and consumer welfare under British policy, it perhaps devotes less emphasis to these topics than to a broad analysis of agriculture in a framework of economic growth and world markets. The latter is, of course, a necessary foundation for analysis of any major industry in Great Britain.

McCrone has provided an interesting perspective with regard to British agriculture and the postwar and interwar policy surrounding it. He provides insights which will prove interesting to persons not currently acquainted with the details of European agricultural development and the particular problems stemming from economic growth, Common Market organization and specific national agricultural policies. He has developed some new understanding and alternative analyses of the agricultural sector even as related to economies other than Great Britain. Some conclusions are of interest particularly in the United States where even larger subsidies and problems of policy have been involved in the agricultural sector.

The first of 12 chapters is devoted to the role of agriculture in the British economy. He presents figures illustrating the somewhat unique position of agriculture in New Zealand, Australia and Great Britain where agriculture's share in national income exceeds this industry's percentage share in the national labor force. Of interest relative to U.S. agriculture and its current over-expansion, he explains in Chapter 2 the contraction of British agriculture following the Napoleonic wars and its consequences in causing farm-income depression and a restrained growth in agricultural efficiency. He attributes part of the small role of agriculture in the British economy to the classical emphasis on free trade and *laissez faire*. Later, he questions the unrestrained application of these policies. He points out that while agriculture contracted under these policies, the adjustments did not bring a prosperous farm industry.

Differences between Britain and other European countries in respect to policies used in supporting farm commodity prices and income are discussed.

Professor Wendt has produced a study intended to cast some light on the comparative performance of one sector of the economy, namely housing. This analysis of postwar housing policies in the United Kingdom, Sweden, West Germany, and the United States, is based upon a year of first-hand research carried out by the author in Western Europe during 1958. It is clear that Wendt acquired not only a thorough knowledge of housing policies and conditions in the countries on his tour but also immersed himself in the abundant literature on housing in the various countries.

The book is particularly commendable for the candor of its views and the author's willingness to draw firm policy conclusions from his data and observations. Statistical tables are used to support rather than to replace personal judgment and opinions. For example, the author recommends our adoption of some policies, especially income tax subsidies, which Western Germany found effective in stimulating housing:

Rapid amortization for federal income tax purposes of private investments in low-income rental housing should furnish a strong incentive for private investors to build housing for such groups. Because of the strong preference for ownership housing in the United States, provisions for rapid amortization subsidies should be extended to owner occupants unable to afford housing of acceptable standards without subsidy. [P. 269.]

Yet for all its merits, the book is in some ways disappointing. Its contribution to improving future housing policies in the United States is likely to be limited for several reasons:

1. Both in Sweden and the United Kingdom, two of the three Western European countries studied, the direct participation of government in the housing market has been greater than would be tolerated in the United States. For example, in Sweden more than 95 per cent of new dwelling construction in recent years was built with the aid of state financing. Moreover, the strong cooperative movement in Swedish housing is unlikely to find much emulation in the United States. So far as the United Kingdom is concerned, the author points to numerous weaknesses in postwar housing policies which, it is true, can be studied with profit in the United States. On the whole, however, housing policies pursued by these two countries are either inapplicable to conditions here or at best suggestive in a negative way.

2. Wendt is particularly impressed by the effectiveness of postwar housing policies in Western Germany which, he believes, not only succeeded in rapidly increasing the quantity and quality of the housing stock but did so while maintaining a remarkably stable price level. Reliance was placed on the stimulation of private savings for housing, direct public lending and subsidies, low-interest-rate loans, and generous tax incentives. Undoubtedly, economic liberalism played its part. But one factor of great importance in the relatively inflation-free growth of Western Germany has been widely ignored, in this book and elsewhere. Wage and price stability reflected to a large extent the tremendous influx of labor from East Germany. This influx not only contained the wage-price spiral suffered by other countries but provided the labor force needed for economic reconstruction and expansion. If this analysis is correct, Germany's economic "miracle" may look different in the future

as the exodus of East Germans (12 million between 1945 and 1960) comes to a stop. The experience of Western Germany illustrates the difficulty of isolating the impact of the myriad of economic policies on the market for housing.

3. One other consideration is likely to limit the usefulness of this book in devising future housing policies for the United States. Recent years have brought some basic structural changes in the market for residential construction. Postwar policies designed to spur construction are no longer suitable for the future. The tremendous backlogs of demand for housing, accumulated not only during the years of war but during the earlier years of depression, have been satisfied. As Saul Klamman pointed out in a recent talk, builders will need to "develop and aggressively market an appealing product that will stimulate demand of buyers already well housed, rather than buying out of desperation as in former years. Opportunities in the replacement market rather than in the new house market need to be imaginatively exploited. In addition, new markets for elderly people, for low and middle income groups, for those displaced by urban renewal and highway construction, for nursing homes, and for minority families will require special skills for profitable ventures."

Wendt has provided, in Chapter 6, a useful evaluation of United States housing policies. He is justly critical of the proliferation of housing agencies, their divided responsibilities, and their generally poor administration. He criticizes the failure of the federal low-rent public housing program. He urges the creation of a secondary conventional mortgage market along lines developed recently in much greater detail by Jones and Grebler.¹ He rejects, however, the widespread view that federal housing credit policies have led to cycles in residential construction. On this issue, many housing authorities would disagree sharply, blaming the ceiling on Federal Housing Administration and Veterans Administration loans for systematically shutting off the flow of mortgage credit in periods of strong economic expansion. But even this issue has receded in importance with the maintenance of easy credit conditions and the large flow of savings into the mortgage market during the economic recovery of 1961-62.

Anyone concerned with housing either as student, investor or administrator should read this book. He will disagree on many points but he will not fail to be stimulated.

WILLIAM C. FREUND

New York University

¹O. Jones and L. Grebler, *The Secondary Mortgage Market, Its Purpose, Performance, and Potential*. Los Angeles 1961.

Labor Economics

Employment Objectives in Economic Development—Report of a Meeting of Experts. Geneva: International Labour Office, 1961. Pp. xi, 255. \$2.75.

The report on *Employment Objectives in Economic Development* was sponsored by the International Labor Office and was prepared by a group of

five economists from Brazil (Campos), Canada (Higgins), Italy (Marsan), Poland (Pajestka) and India (Raj). The ILO asked these economists "to make a thorough analysis of the problems of employment creation . . . and to suggest appropriate measures for the expansion of employment opportunities" (p. iv).

The volume is divided into two parts. The first 140 pages contain the report of the experts, and the balance is a summary presentation of economic development in eleven countries since the Second World War plus brief excerpts from a discussion of an ILO Committee on Employment Problems.

Although the name of Malthus is never mentioned in the report, the spectre evoked by him permeates the volume. World population, estimated at about 3 billion, has doubled during the 20th century and is expected to quadruple by the year 2000. Between 1925 and 1950, world population increased at the annual rate of 1.1 per cent, but during the next decade the comparable rate of increase rose to 1.5 per cent. And the increase has been most rapid in underdeveloped countries where the problems of subsistence and survival are most acute. Economic growth and demand for new jobs in most of the world have not kept pace with medical technological developments. During the past decade alone mortality rates in some underdeveloped countries have dropped by half.

This is the backdrop against which the ILO panel of experts analyzed economic growth in underdeveloped countries and attempted to propose the best methods for generating new employment. In India, Pakistan, Japan and other countries the panel found that the estimated additional jobs that would be created under the respective economic plans or projections would barely suffice to absorb the new entrants into the labor force. As the Queen said to Alice, "Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"

The underdeveloped economies are characterized by a dualistic structure. The traditional sector is predominantly based on agriculture; the second is a slowly growing industrial complex. The livelihood of the bulk of the population is dependent upon the traditional sector characterized by low capital investment and labor-intensive production. The ILO panel sees little hope for the generation of additional employment in this traditional sector of the underdeveloped economies. Capital investment in this sector would raise the living standard of few but tend to transform underemployment to unemployment of many more. The panel favors land reform and improvements in agricultural productivity. But in those countries where the cultivated land has been redistributed among the agricultural workers, the average farm has been limited to less than two acres per family. Even with improved productivity, the small landowners are condemned to bare subsistence.

The hope of the underdeveloped countries lies, therefore, in accelerating the growth of the modern sectors of their economies. The report suggests that an adequate rate of growth would require that at least a fifth of national income of underdeveloped nations should be allocated to new investment. Foreign capital is essential to achieve this rate of investment. The report also

favors "bold" fiscal policies and "appropriate" wage policies to restrain rising consumption resulting from increased productivity in order to channel the additional income into investment.

Expanded secondary and higher educational facilities are normally prescribed as an essential part of an economic program for underdeveloped countries. But the case studies indicate that in most of the underdeveloped countries the level of unemployment remains high among the educated groups, since the relatively slow economic growth fails to generate enough professional and technical jobs for the high school and college graduates who refuse to settle for manual labor.

The report is intended as a manual for policy-makers and planners in underdeveloped countries. It is perfectly adequate in summarizing the economic problems facing underdeveloped countries, but, being the product of economists exclusively, it falls short in considering the socio-cultural factors that affect economic development.

The report also suffers from the antiseptic quality common to many ILO studies. No consideration is given to political factors. It deals with economic development in terms of universal verities unaffected by political institutions.

SAR A. LEVITAN

George Washington University

Public Policy and Collective Bargaining. Edited by J. SHISTER, B. AARON, AND C. W. SUMMERS. Industrial Relations Research Association Publication No. 27. New York: Harper & Row, 1962. Pp. viii, 248. \$4.50.

This is a multiple-author volume dealing with a number of contemporary and crucial issues in labor-relations law. Included are employer free speech (Benjamin Aaron); the duty to bargain in good faith (Robben W. Fleming); union security (Paul E. Sultan); picketing and boycotts (Donald H. Wollett); antitrust and collective bargaining (George H. Hildebrand); regulation of internal union affairs (Joseph R. Grodin); and a comparison of United States and Canadian experience (Harry D. Woods). Preceding these essays is an excellent contribution by Douglass V. Brown and Charles A. Meyers providing the historical and theoretical framework for United States labor-relations law.

Since the volume does not treat other vital areas of public control, a condition which the editors fully acknowledge, it is not suitable as a basic textbook for a labor law course; but the generally high quality of the essays is such that it deserves a place on the reading lists for undergraduate and graduate students in such courses. We are told that the volume is not directed at the labor law specialist or for the layman, but is pitched for the "informed observer." On this score it must be reported that the essays are not of equal caliber. Some treat the material in a routine way, largely duplicating material found in the ordinary labor law textbook with which at least some "informed" observers should be familiar. On the other hand, in others there is fresh analysis which warrants the attention of the specialist, and particularly of those actively engaged in shaping the law of labor relations.

With full deference to the editors' choice of subject material, it is still

regrettable that the volume lacks a treatment of the effort of the national administration to influence the substance of collective bargaining through the so-called "guideline" approach. This development is packed with controversy and implications. Inferentially, however, there is some relevance to this contemporary problem in the case of Woods' contribution on the Canadian scene. Those who applaud the Kennedy-Goldberg approach, and would welcome even more direct government intervention, should heed his conclusion that in the Canadian provinces where such intervention has been extreme, the program has resulted in the "emasculatation of collective bargaining" (p. 236). Indeed, after a most penetrating and brilliant analysis, Fleming concludes that the essence of his argument is that "as long as the parties are in good faith, and the demand is legal, the NLRB and the courts should keep their hands off" (p. 84). Statism, he suggests, dulls the opportunity for and the incentive of private parties to use the collective bargaining process effectively to meet the challenges of the future.

A strong point of the volume is that in most of the essays description is subordinated to analysis and recommendations. Sultan is concerned that "harmony" and "maturity" in relations between employers and unions may result in the abuse of dissident minorities, though he apparently does not believe that "right-to-work" laws provide the answer to this problem. Hildebrand rejects the general expansion of antitrust laws to organized labor, though he believes if such a program is confined to specific abuses "such as make-work or exclusion from the product market, antitrust could yield some modest benefit" (p. 179). On the other hand, analysis and recommendations are not contained in the Grodin essay. His research shows that much of the Landrum-Griffin Act (1959) is rooted to British and U.S. common law, and that this law is based upon the idea that a union is a sort of a public utility or government body. However, he avoids wrestling with the conceptual problems which are involved in direct government control of union internal affairs.

There is likewise some unbalance in the provocative contribution by Wollett, though of a different type. He devotes most of his space to explaining and defending his legislative proposals designed to make picket and boycott law more *consistent* and certain. Except as may be relevant to his proposals there is no searching analysis of the contemporary body of law governing the union conflict weapons which he treats. Further, not only is there real doubt that Wollett's proposals themselves add up to consistency, but his major premise should not be accepted without challenge. It could be argued that the capacity of our law to be inconsistent is a strength rather than a weakness. Inconsistency may be the better choice as to alternatives. Indeed, Aaron, after a sophisticated analysis of the free speech problem, rejects extreme solutions (which might result in consistency) and concludes: "the middle ground, uncertain though it may be, offers the best hope of approaching the unattainable ideal of absolute equality under the law" (p. 54).

Should not some degree of inconsistency, and even contradiction, flow from the multi-objective complex of U.S. law? It seeks at the same time to protect the employer, employee, union, and public. If the chief objective is

to assure consistency, a body of law might not have the capacity to reconcile these conflicting interests in a manner which approaches equity. In short, as worth while as consistency might be, it could be purchased at too high a price.

FRED WITNEY

Indiana University

L'indexation des salaires: ses répercussions économiques. By JEAN-PIERRE GERN. Neuchâtel, Switzerland: Les Éditions de la Baconnière, 1961. Pp. 198.

Gern's study is a lucid, carefully delimited analysis of the pros and cons of wage escalation, with a special focus on whether automatic, proportional adjustments to changes in cost of living tend to "unlatch" (*déclencher*) or unleash inflation. His monograph adds little to the theoretical argumentation on escalation. However, his survey of postwar experience with *l'indexation* in Italy, France, Belgium and Luxembourg should be of real value for U.S. labor economists.

Gern is concerned only with that type of *l'indexation* or *l'échelle mobile* (translated by this reviewer as wage escalation) which links wages directly to a price index (p. 19), and under "free" regimes (p. 75). An introductory and elementary analysis of the nature, purposes and technical difficulties of *l'indexation* comprises approximately the first third of the monograph. It includes a summary of attitudes toward wage escalation typically held by Western European employers, trade union leaders and various governments. The analysis embraces both social and economic factors (pp. 44-51).

To this reviewer, the most rewarding part of the study is its reasonably detailed account of experience with wage escalation in the four countries mentioned above, sprinkled with illuminating comparative references to other "free regimes," including the United States, Great Britain and Western Germany. In a concluding section, Gern comes to grips with such basic questions as whether wage escalation unleashes and prolongs inflation and whether it facilitates or hinders economic growth.

Gern claims that "direct observations" were his most important source for this study (p. 62), although admitting the inadequacy of the available data for answering some of his questions. A basic difficulty appears to have been that of separating out and identifying the impact of wage escalation per se. A comprehensive bibliographical appendix on wage escalation contains many Western European references that should be of interest and value to the U.S. labor economist.

Gern's analysis of experience with escalation in France and Italy is thorough and holds perhaps the greatest general interest. In Italy, almost all wages were subject to *l'indexation* in the postwar period. Gern found that between 1949 and 1957 wage escalation accounted for roughly half of the 56 per cent increase in the cost of Italian manual labor that occurred during the eight-year period. France offers the interesting experience of an "indexed" legal minimum wage. Gern concludes that the direct effects of *l'indexation* on the general level of wages in France do not appear to have been substantial (p. 153). As long as the increase in the legal minimum remains propor-

tional to increases in the cost of living, it is unlikely in Gern's view to have much influence on *les salaires-pilotes* or on the general level of wages.

Gern prudently acknowledges the difficulties in determining the secondary effects of wage escalation. He also is aware of the complexity of the analytical problems with which he is dealing. In commenting on the effects of partial escalation limited to industrial sectors where wages are generally the most dynamic (as in the United States), Gern shrewdly observes that escalation serves to reinforce the economic factors which operate in its absence and which "dig an always larger moat" between wages in such expanding sectors and those in tertiary industries like hospitals and hotels (p. 151).

It is Gern's opinion, based on his study of the postwar period, that the inflationary wage-price spiral is neither more violent nor more lasting with wage escalation than without it (p. 167). "The maintained rhythm and strict proportionality of the wage increase make it less dangerous because an important element of uncertainty is removed. One knows when and how the adjustment will be made" (p. 172). He concedes, however, that adjustment of wages to a previous price increase can trigger inflation in conjunction with other factors (p. 155).

HAROLD W. DAVEY

*Iowa State University of
Science and Technology*

The Employment Forecast Survey. By DOUGLAS G. HARTLE. Canadian Studies in Economics, No. 14. Toronto: University of Toronto Press, 1962. Pp. xi, 153.

Economic forecasters and students of expectations will be thoroughly discouraged by the results of this study. An evaluation of the employment forecast survey of the Canadian Department of Labour between 1952 and 1957, it finds the data to be virtually valueless for yielding reliable industry predictions of employment.

The employment forecast survey (EFS) has been in operation since 1946. In that year each of approximately 800 establishments was asked to submit every three months data on actual employment for each of the past three months as well as forecasts of its employment three and six months in the future. The purpose of these predictions was to provide a basis for anticipating future employment, specifically, the employment index of the Dominion Bureau of Statistics (DBS). These predictions were obtained by projecting the most recent DBS index by the ratio of total forecasted employment of the reporting firms at the most recent date. In practice, administrators were free to project employment on the basis of anticipated quarterly changes or on the basis of year-to-year changes, or even to adjust the data on a subjective basis to allow for special circumstances, such as a labor dispute.

The present study focuses on the predictions of manufacturing firms and, for the sake of consistency, evaluates all of the predictions on the basis of year-to-year changes. This approach removes one of the subjective elements in the analysis of the estimates and serves to increase the forecast errors only slightly.

The evaluation of the reliability of the forecasts rests upon a framework which divides the total error of a forecast into "sampling errors" and "forecast errors." This framework is based on the sampling theory concept of representing the total variance of an estimate (the mean square error) as the sum of the sampling variance and of the variance due to nonsampling errors. In this case, the sampling error is defined as the difference between the actual change in the employment of EFS-reporting firms and the change in the DBS employment index for the same period. The forecast error is the difference between the aggregate anticipated employment of the EFS-reporting firms and the actual employment for these firms. In other words, the total error is partitioned into two parts, one part measuring the extent to which the sample may be atypical of the population, and the other part measuring the extent to which the sample firms are unable to predict their own employment.

By means of this useful framework, the author is able to differentiate between the sampling errors and the nonsampling errors of the forecasts. The results are devastating:

1. The total error of the EFS forecasts, based on the three- and six-month forecasts of reporting firms (related to predicted changes from the levels in corresponding months of the preceding year), differed substantially from the actual change of employment (the DBS index). As a rule, the forecasts consistently underestimated the change in employment, being too high when employment was falling and being too low when employment was rising. Turning points were invariably missed. The three-month predictions were somewhat better than the six-month predictions but even the former were more accurate than mechanical projection of current levels barely half the time.

2. The average sampling errors were "roughly one-half of the mean changes which the sample purported to estimate" (p. 50). Like the total error, the sampling error caused the actual sample changes to deviate substantially from the changes in the DBS indexes, though the pattern of the error was somewhat different. The direction of change for individual manufacturing industries was incorrect nearly 30 per cent of the time.

3. The three-month forecast errors averaged between one-third and one-half of the actual change in employment of the sample firms, while the six-month forecast errors averaged between 50 and 75 per cent of the actual change. The direction of change was missed 20 per cent of the time by the three-month forecasts and 40 per cent of the time by the six-month forecasts, particularly damaging since the period of observation contained only one cyclical turning point. Neither the sample errors nor the forecast errors were consistent either in direction or in magnitude.

4. On an individual-firm basis, comparison of the accuracy of the forecasts against a straightforward mechanical yardstick suggests that 40 per cent of the firms in the sample submitted forecasts with no net predictive value. In many industries, the forecasts of more than half the firms were valueless by this criterion. Moreover, the direction of employment was missed by nearly two-thirds of the reporting firms at least half of the time, leading the author to conclude that, "*Under our definition of net predictive value with respect*

to the direction of non-seasonal changes we conclude that virtually none of the establishments submitted worthwhile forecasts" (page 77; italicized by the author).

The author shows that some improvement in the forecasts could have been made by removing forecasts of no net predictive value, as one would expect. However, no method could be found for carrying out this deletion in advance, particularly since firms most accurate at one time were not necessarily the firms to be most accurate at a later time.

One may quibble about various aspects of the analysis, such as its focus on a period containing only one cycle, use of arithmetic differences rather than percentage errors, and the exclusion of nonmanufacturing industries. Nevertheless, this is a highly competent piece of analysis and demonstrates conclusively that the forecasts are virtually valueless as direct predictions. In view of the substantial and erratic nature of the errors, they are also hardly likely to be of much use for indirect purposes, such as additional variables in econometric models.

Perhaps most discouraging of all is the finding that there seems to be no means of improving the forecasts. To reduce the sample error to manageable proportions, Hartle shows, would require a prohibitively large sample. Even so, since the firms in the sample (usually the larger firms in the industry) tend to be the more accurate forecasters, reduction of sampling error by increasing sample size may be achieved only at the expense of increasing forecast error, so that the net benefits may be nil. The *coup de grâce* in this respect is data showing that the sampling errors help offset to some extent the forecast errors, so that for some industries elimination of sampling errors would actually increase the total error of the predictions.

A second means of data improvement may lie in transformation of the forecasts. Hartle offers one suggestion along this line, namely, to use regression techniques to relate individual firm forecasts to the industry forecasts and to levels of over-all employment; but no evidence is submitted that the method is likely to work. Even if it were successful, the author points out that the technique is too elaborate and expensive for the resources available.

The final avenue of improvement would seem to lie in seeking improved forecasts from the individual firms. By regression analysis Hartle finds that the relative errors of the forecasts increase with the amplitude of seasonal change and with the irregularity of these changes. However, he rejects the possibility of attempting to educate firms to use better adjustment methods, in part because of presumed administrative difficulties, while seasonal adjustments by the government seem to be out of the question. Nevertheless, if such forecasts are to be improved some program of "forecast education" would seem indispensable. As has been noted in two recent studies of the employer forecasts in this country,* seasonal adjustments were generally made

* William H. Andrews and Gene S. Booker, *Forecasts of Future Labor Requirements of Indiana Employers*. Bloomington: Division of Economic Research, Indiana University, 1957; Robert Ferber, Nai-Ruenn Chen, and Fadil Zuwaylif, "Employers' Forecasts of Manpower: An Interview Study," *Journal of Business of the University of Chicago*, July 1961, pp. 387-95.

in a rudimentary way, those preparing the anticipations having little knowledge of either operating schedules of the company or of forecasting techniques. If the same is true in Canada, persuading the firm of the desirability of having these forecasts made at higher levels and with more sophisticated techniques is long overdue. In many ways such education should not be difficult, for the results could be shown to be of value not only to the government but to firm operations as well.

Other means of seeking data improvement also exist, as by using different questioning approaches. Neither this avenue nor a program of "forecast education" appears to have been tried by the Canadian government. The only change made to date, one resulting from this study, has been to prepare the forecasts by means of a diffusion index approach rather than by the ratio approach. However, this is a relatively minor change, fails to cope with the basic problem and, as Hartle notes, preliminary study suggests that the forecasts obtained by this method appear to be not much better than the ratio forecasts. Clearly, more fundamental changes are needed, or else it would seem hardly worth while spending the money to collect the data.

ROBERT FERBER

University of Illinois

The Economics of Trade Unions. By ALBERT REES. Cambridge Economic Handbooks. Chicago: University of Chicago Press, 1962. Pp. xiii, 208. \$3.50.

The latest addition to the Cambridge Economic Handbook series is a small gem, and Professor Rees is to be commended for his lucid and economical treatment of a large and complex subject. The title might have more aptly referred to U.S. trade unions, since the book is largely concerned with the experience of the United States, but the economic principles are more universal.

Rees' treatment of trade unions is at the same time sympathetic and objective. The weaknesses of some contemporary unions—e.g., restrictive practices, undemocratic procedures, occasional instances of graft or corruption—are dispassionately treated, and due weight is given to the many economic and social gains which can be credited to the trade union movement.

Those economists who like to categorize their colleagues and tilt at "Chicago School" windmills will find little here to occupy their fancies. Illustrative of Rees' balanced presentation are the following:

The view that unions make for a worse allocation of labor does not necessarily imply an unfavorable judgement of the total effect of unions. . . . an economy has other and perhaps even more important goals than the most efficient allocation of resources. [P. 94.]

The pattern of timing of price changes [by business firms] directed blame toward the unions for price rises that were often larger than the direct increases in unit labor costs . . . it has created a greatly exaggerated impression of the role of unions in an inflationary process. [P. 108.]

It is also paradoxically true that the presence of strong unions may

improve the operation of democratic processes in the general national or state government even if the internal political processes of the unions are undemocratic. [P. 182.]

The protection against the abuse of managerial authority given by seniority systems and grievance procedures seems to me to be a union accomplishment of the greatest importance. . . . In my judgement the economic losses imposed by unions are not too high a price to pay for their successful performance of this role. [P. 195.]

By proposing or supporting such measures as aid to chronically depressed areas and publicly financed medical care for the aged, unions are acting as a social conscience for the American economy. [P. 202.]

In the tradition of the Handbook series, the book is written for the beginning student. It includes only three tables and a single diagram. It would be a mistake, however, to dismiss it only as an elementary book, for the reader is led to considerable heights without being aware of the incline. In early chapters on the sources of union power and union wage policy the student learns to view the economic implications of union behavior, to observe the terms of settlement rather than just the means, and to see that in collective bargaining "economic forces are filtered through political groupings which can delay or redirect them, but not reverse their flow."

In measuring the impact of unions on earnings, Rees concludes from a variety of empirical studies that U.S. unions on the average have been able to raise relative wages 10 to 15 per cent, although losing most of this advantage during rapid inflationary periods. In periods of tight labor supply "it seems reasonable to believe that . . . there is considerable union influence on the timing of non-union wages changes and little on their amount" (p. 105). To the extent that unions do achieve a monopolistic wage advantage, the burden is borne largely by nonunion labor in the form of underemployment (i.e., an excess supply of labor in services, agriculture and other low-return occupations).

In later chapters Rees analyzes union practices affecting the rationing of jobs through control of entry, working rules and seniority systems. This section is excellently handled with a minimum of descriptive detail and without losing sight of the goal of applying economic principles to market behavior. Other textbook writers could well use this as a model.

Chapters 10 and 11 treat the union as a public institution. The absence of democratic government in many U.S. unions and the existence of corruption in some are regretted, particularly in light of the traditional union ideology, but these issues are treated with understanding. On the larger political scene Rees sees unions as a stabilizing force, giving a representative voice to workers and providing a social conscience for the nation on many aspects of current affairs.

Rees concludes that purely as an economic institution unions are probably "an obstacle to the optimum performance of our economic system." However, he adds:

Many of my fellow economists would stop at this point and conclude that unions are harmful and that their power should be curbed. I do not

agree that one can judge the value of a complex institution from so narrow a point of view. [P. 195.]

In the broader perspective, he concludes, U.S. unions have matured and have departed from their radical heritage; their membership has become stabilized and they are performing a responsible role in our society.

This reviewer has only two minor criticisms to offer. First, I would have liked to have seen a brief chapter on the process of collective bargaining to augment the excellent sections on strikes and on union wage policy. Modern bargaining theory lends itself to presentation in an introductory book when expressed nonmathematically, and can give a student clearer insight into strategy and tactics. Perhaps a second edition can round out this presentation.

Second, a brief bibliography would be an aid in guiding the reader on to further study of the problems discussed. This is not in the tradition of the Handbook series, but the footnotes are not an adequate substitute since they do not appear to give a fully representative view of the literature.

These are but small stones to cast at an unusually good book. Rees has admirably brought off a difficult task, and even the advanced student will find it both interesting and instructive reading. It would make an excellent text for an introductory course in labor economics, adequately augmented with other readings.

ALLAN M. CARTER

Washington, D.C.

Population; Welfare Programs; Consumer Economics

Family Composition and Consumption. By MARTIN H. DAVID. Contributions to Economic Analysis, No. 25. Amsterdam: North-Holland Publishing Co., 1962. Pp. viii, 110. \$2.80.

1961 Survey of Consumer Finances. Monograph No. 24. By GEORGE KATONA, CHARLES A. LININGER, JAMES N. MORGAN, AND EVA MUELLER. Ann Arbor: University of Michigan Press for Survey Research Center, Institute for Social Research, 1962. Pp. xv, 145.

The Structure of Income—Some Quantitative Essays. By IRVING B. KRAVIS. Philadelphia: University of Pennsylvania Press, 1962. Pp. v, 317.

These volumes have in common the use of sample data of household behavior and concern with demographic factors which characterize household behavior. The *Survey of Consumer Finances* is chiefly a compilation of statistics which supplement previous publications. The other two books are analytical. Professor David presents a statistical demand analysis. Professor Kravis' study covers a wide range of topics on the statistics and theory of income distribution.

Part I of the *Survey* volume summarizes the financial findings for 1961. Considerable parts of the data, such as age and income characteristics of car buyers, age of cars, number of used cars bought, age, education, and income status of instalment debt borrowers, represent the chief information available on the subject and have proven of great value to economists. Other data, par-

ticularly regarding income distribution, supplement census findings and appear to reconcile well with them. Part II consists of the quarterly surveys of consumer attitudes and inclinations to buy which have appeared previously in the press in incomplete form only. The period covered, late 1960 to 1961, was one of mild recession and slow recovery. Answers of consumers to questions on business conditions and outlook and personal experience suggest that the public was well aware of the changing business picture, and adjusted its outlook and plans in a mild pattern similar to that of business conditions.

A less mild finding was that buying plans for automobiles in October and November 1960 were up from previous years. At that time, some 15.3 per cent of families indicated plans to buy, as compared to 13.0 in 1959 (p. 92). The forecast seems to have been erroneous, since actual purchases in the fourth quarter of 1960 through the first three quarters of 1961 were down about 10 per cent from a year earlier in value and number. Automobile purchases did not increase notably until the last quarter of 1961, and this upturn was correctly anticipated by later surveys of 1961. The survey might be more useful if it were built on more analytical foundations, considering in the case of automobiles factors such as the age of car, family status, and the like, which have been found significant by G. C. Chow and others. It is to be hoped that the analytical children of the attitude surveys, such as the study by David, will come back to help the parent. Significant factors suggested by the Survey were a liking for compact cars and stable prices. The results of the attitude survey, and of other surveys modeled after it, interesting as they are, remain more questionable in value than the finance survey, as was noted in the 1955 report of the Consultant Committee organized by the Board of Governors of the Federal Reserve System to review the statistics.

More attention to the amount of error would be welcome in a summary of sample results. One test of surveys is the ability to approximate accurately global quantities such as income and financial assets known from reliable sources. Until surveys pass this test of estimation, the results will remain suspect.

David considers the effect of family size, age of head of household, family income, and marital status, on the purchases of automobiles, houses and consumer durable goods. Data were obtained from the *1955, 1956 1957 Surveys of Consumer Finances*. The attempt is not to construct general demand functions, but rather to isolate the effects of demographic factors on demand. The most common technique is a two-way classification analysis of variance, though covariance and regression extensions of the method are utilized also. For example, the average number of rooms occupied by home owners was computed for families of a given size and given income bracket (p. 59). Since the variance within classes is less than that between classes with family size or income constant, the number of rooms possessed by a family can be argued to be related significantly to family size and income. The regression findings for the case just cited suggest that the income elasticity is about one-tenth and that the effect of a one-person increase in size of family is .07 of a room, and this means that income and family size, while significant, have surprisingly small effects on demand. A further finding is that

the value of houses increases less than the size of the house with family size, so it is argued that the quality of houses bought decreases with family size, as would be expected with constant income.

In general, the results suggest that families behave rather sensibly in making the best of their income situation. For example, larger families tend to buy more producer-type durable goods, such as washing machines, than smaller families, but not to buy more furniture or television sets. Expenditure on automobiles per dollar of income declines in higher-income brackets as would be expected if the object were transportation and not prestige and glitter. Young people who presumably like to move around more, tend to spend more on cars. Home ownership increases with income above a level of about \$4000 but not below. A difficulty, which also arises in Kravis' volume, is that there is a large degree of intercorrelation of independent variables, age, income, race, etc. Experiments with composite variables such as used in factor analysis would seem to be desirable in the interest of conciseness and clarity.

A substantial part of Kravis' work is concerned with an analysis of the *Study of Consumers Expenditures, Incomes and Savings* conducted by the Bureau of Labor Statistics in 1951. It is to the author's credit that he faces the question of the accuracy of the sample as tested by its success in estimating income aggregates, wage and salaries, rent and dividends, interest, and the like. There is a serious underreporting of property-income types in the sample. Also we learn that the editing process reduced the number of usable interviews from 16,532 to 12,389 and although this gives us confidence that efforts to preserve accuracy were genuine, it also makes us nervous as to the accuracy of the results. On the other hand, there is some evidence that the inaccuracies are spread rather evenly and not biased by demographic and income factors, so that there is a good chance that the analytical results are valid.

It turns out that the various demographic factors explain in considerable degree the family income. In general, if you want to have a high income it pays to live in the north, in the suburb of a city, to be white, a salaried manager or professional employee, about 47 years of age, to have over 16 years of schooling, to live in one place for a long time, and to have a working wife. As regards race, Kravis finds that some 20-30 per cent of the differences in income can be explained by occupational bias toward low-paying occupations for the nonwhites. In the northern cities where the difference is the least, a standardized income for nonwhites is only 79 per cent of the white income (pp. 46-47). This result is very possibly not correct, as Kravis recognizes, because the occupational classification utilized in the study is too broad, but until it is corrected by further study, it certainly is alarming, not only because of what it says about racial prejudice, but because it appears to contradict the marginal productivity theory of distribution. The latter can probably be resurrected, by introducing consumer bias against nonwhite-made goods and services, or by introducing effects on the productivity of white employees, but the task would not be easy.

Theories of income distribution come into question again in the chapters

on trends in the labor share of income, and on the size distribution of income. The author finds that the labor share of income has generally tended upward, and he is confident that this is due in part to the changes in the relative supply of factors and in the nature of innovations, but beyond orienting his findings with previous discussions he does not take us far. Kravis finds income distribution to correspond more nearly to the log-normal than to any other simple distribution, but does not find this fit to be very adequate. This latter finding tends to eliminate those explanations which depend upon the assumption of the probability of a given per cent change in income. The reviewer found most convincing the argument attributed to R. H. Tuck (*An Essay on the Economic Theory of Rank*, Oxford, 1954) that income is related to the productivity which each worker gives to other workers. Assume that workers in public health, law and order, education, design, and supervision and the like require special training or talents which limit the supply, and that these employments increase the productivity of all or of a great many workers. The marginal productivity of such skilled workers will be increased much more than the size of the skill difference itself would suggest, and a skewed income distribution would result.

Many other topics are touched upon by Kravis, including international comparisons of incomes and income distribution, and trends in inequality of income in the United States. This book is an excellent starting point for any one interested in empirical results on income distribution and the relation of these to theories of income distribution.

PAUL B. SIMPSON

University of Oregon

The Development of the Social Security Act. By EDWIN E. WITTE. Madison: University of Wisconsin Press, 1962. Pp. xvi, 220. \$5.75.

Economic Security in the United States. By VALDEMAR CARLSON. New York: McGraw-Hill Book Co., 1962. Pp. xi, 225. \$6.50.

Like a number of other areas in economics, the literature on social security has traditionally been long on description but short on theory. The two books under review present strong examples of each aspect of the field. The late Professor Edwin E. Witte reviews the drafting and passage through Congress of the Social Security Act of 1935 from the vantage point of the then Executive Director of President Roosevelt's Committee on Economic Security. This committee not only was charged with formulating the Act's basic features, but it also guided the legislation through Congress. In contrast, Professor Valdemar Carlson of Antioch tries to span the gap between the applied and theoretical economics of social security by constructing a set of meaningful theoretical concepts.

The first of the two major sections in Witte's book is a legislative history of the Social Security Act, and the second is a description of how the major provisions, such as retirement and unemployment compensation, fared in the legislative process. The appendices include, among other items, the recommendation on health insurance made by the Committee on Economic Security.

Witte's book is actually a memorandum written soon after the passage of the Social Security Act but not made public until its present printing. The reason for the delay is probably that it is an "inside" story of how personalities, issues, and pressures were blended together to produce this Act. The roles of President Roosevelt, Secretary of Labor Perkins, Harry Hopkins, and various congressmen are described in detail. The debate on the 1935 Act raised alternatives to a social security system which today is accepted by many as inevitable in form. The pressures exerted by various individuals and groups, as seen in Witte's book, were strong but not as consistent as one would imagine. William Green, president of the American Federation of Labor, proposed many amendments which were interpreted as "an attack upon the bill by organized labor" (p. 87). Actually organized labor "mildly favored this measure" (p. 88). Though the National Association of Manufacturers actively opposed the bill, the president of the United States Chamber of Commerce generally supported the bill as did the National Retail Dry Goods Association. The American College of Surgeons came out for health insurance in spite of the American Medical Association's traditional opposition to it.

Witte's book is a valuable document for understanding how the Social Security Act was developed and passed. His knowledge of the political process and people was incisive. With characteristic modesty, Witte played down his own role and influence. This flaw is partly rectified in the foreword by former Secretary of Labor Frances Perkins and in the introduction by Robert Lampman of Wisconsin and Wilbur Cohen, now Assistant Secretary of the Department of Health, Education, and Welfare.

Carlson's book focuses on those "institutional arrangements which have been or are in the process of being achieved to provide income outside of wages and returns from ownership of property" (p. 1). These are nonfactor income, at least from the standpoint of the recipient. The main topics included in this short book (225 pages) are fairly traditional. The background of social insurance occupies two chapters. A chapter apiece is devoted to workmen's compensation; Old Age, Survivors, and Disability Insurance; public assistance; unemployment compensation; employee benefit programs; and supplemental unemployment benefits. Family allowances and the medical service issue are discussed separately. Preceding these topics is a discussion of the market system and following them is an analysis of economic security institutions.

Carlson's book is distinctive in its meaningful generalizations on social security institutions and theory. All too often books in this field give reams of statistics and administrative details yet miss the nub of the matter. Not so with Carlson's book, which contains no tables of figures, and includes organizational fine points only as needed to explain a concept. For example, in analyzing unemployment compensation laws, Carlson explains in detail only the concepts of availability for work and experience rating. Nevertheless, through his discussion of the issues surrounding this program, he manages to give a clear picture. Without question, this is a well-written book.

Carlson's central theme of economic security as nonfactor income runs like this: The ideology of the self-regulating market has molded the scope and character of the programs for economic security. In public assistance, rehabilitation to work-force status or provision for relief at a very minimum level are built-in principles which mesh with free market economics. In the categorical relief programs such as aid to the blind, the individual is presumed out of the labor force by consequence of his disability or other limitation. However, general relief does not gain even this limited acceptance since "sturdy vagabonds" and "valiant beggars" might be malingering and the infestation of living on governmental doles might spread to productive citizens. Social insurance programs were also molded to the free market ideal. The benefit recipient must have been attached to the productive labor force, or in the case of dependents, related to someone in the labor market. The result is that social insurance gains a more respectable standing than public assistance because the right to it has been earned through significant attachment to the free labor market. The private employee benefit programs, such as pensions and supplemental unemployment benefits, have the same respectable status as their public counterparts.

Carlson also shapes a justification for nonfactor payments through his distinction between the money expenses of production and social costs; that is, costs which develop out of industrial activity but which do not appear on the employer's account books. To Carlson, "Social insurance has proved to be a workable compromise to bridge the gap that separates the employer's interest in gearing production expenses to variable costs and the employee's interest in having his services considered as overhead cost" (p. 189).

Carlson has done a good job of revealing the impact of the free market ideology upon the shaping of economic security programs. He has performed equally well in discussing selected economic topics, such as the impact of economic security upon labor mobility, horizontal income redistribution, and worker incentives. The use of nonfactor income as an analytical tool needs, as Carlson readily admits, further development. Carlson's book should be useful as a text in social security courses and as a reference volume to economists who want to grasp the key ideas and issues in economic security.

JACK SKEELS

Wayne State University

The Economics of Public Education. By CHARLES S. BENSON. Boston: Houghton Mifflin Co., 1961. Pp. xx, 580. \$7.00.

The magnitude of public education in the United States today is unparalleled in human history. A few statistics point up this fact: In 1929, 9.8 per cent of our working force was employed in agriculture and 3.6 in educational services. In 1959, the corresponding figures were 3.7 per cent for agriculture and 5.3 per cent for education. It would be difficult, if not impossible, to find another civilization in which school teachers outnumbered its farmers. Again, over a fourth of all Americans are enrolled in schools and colleges and millions more participate in programs of adult education. All told, education

costs us \$20 billion a year and some authorities believe this figure must be doubled in a decade to meet individual and social needs. Education has become big business.

These facts demonstrate the need for exploring the economic base of public education. In the past, the practical aspects of this subject have been emphasized. Textbooks in the area have stressed such subjects as public school finance, taxation, and state and federal aid to education, all useful to legislators and public administrators as background material for carrying on their work. Analysis of such topics in operational finance as the budgeting and auditing of school funds, financial accounting for school systems, and the financial management of school property have given school administrators training in certain phases of their day-to-day tasks. The study of school finance, in fact, developed largely as a branch of school administration.

Readers well grounded in such subjects as taxation systems, fiscal policies of federal and state governments, and the budgetary process will find much that is familiar in Benson's *The Economics of Public Education*. His original contribution, implied in the title of this volume, is to broaden the scope of the subject and to shift its emphasis. What he has endeavored to do is to bring the study of the economic aspects of education into the mainstream of economic thought, and to "use economic reasoning more explicitly in dealing with school expenditures" (p. viii). In short, this is not just another how-to-do-it textbook for public officials or school executives. It offers instead a more extended treatment of theoretical subjects like demand analysis, national income measurement, the determinants of school salaries, and the effects of inflation on school expenditures than conventional texts in the area. The point of view that pervades the volume is revealed in Benson's statement that he regards marginal analysis as the "center of economic theory."

Harold C. Hunt, editor of the volume, praises Benson for his "wide competence, deep personal involvement, and distinguished background of training and teaching in the fields of economics and school finance." These qualifications are amply displayed in the breadth and scope of Benson's exposition, the range and depth of his source material, and the unusual array of valuable tables he presents on taxes, borrowings, and grants-in-aid. This book, however, has an auxiliary aim—to offer readers who lack prior knowledge of economics sufficient background to grasp Benson's ideas. The sections on elementary economics, however, tend to be theoretical in nature and they are sometimes written in lackluster style.

It is a bit early to assess the ultimate influence of this trail-blazing volume. Hunt suggests that it will result in a reappraisal of the entire area and that it will undoubtedly prove a "landmark in the literature of school finance." The burgeoning of school budgets throughout the nation and the continuing need for evaluating educational finances suggest that the first prediction will probably be realized. It may well prove a landmark in the literature of the subject as well, but it will take another decade or two before we find this out.

FREDERICK SHAW

The City College

Related Disciplines

The Calculus of Consent: Logical Foundations of Constitutional Democracy.

By JAMES M. BUCHANAN AND GORDON TULLOCK. Ann Arbor: University of Michigan Press, 1962. Pp. x, 361. \$6.95.

In recent years, as economic theory has come to be conceived as a general theory of rational behavior, rather than merely a description of market behavior in capitalistic economies, several economists have attempted to apply the economist's theoretical techniques to the study of certain broad political and social questions that previously have been left to other disciplines. Kenneth Arrow, Duncan Black, Anthony Downs, Charles Lindblom, and Henry Oliver, for example, have helped to develop a rigorous new literature that has at once deepened political theory and broadened economic theory.

James Buchanan, a leading student of public finance, and Gordon Tullock, an imaginative political scientist, have combined their talents to produce, in the book under review, a stimulating addition to this new literature. They emphasize in their highly original treatise the relationship between constitutional procedures and economic policies. Their work is, however, distinguished from most other theorizing about political problems by its implicit ideological emphasis. The somewhat eccentric ideological quality that characterizes their writing unfortunately narrows their appeal and perhaps obscures the objective importance of some of their theories. Their right-wing view is, on the other hand, also a blessing in that it gives them an unusual perspective that must account for many of their fresh insights. In scholarship it is not perhaps necessity, but prejudice, that is the mother of invention.

Buchanan and Tullock quite plausibly argue that the utilitarian, rational type of behavior assumed in economic theory should be assumed in the study of politics as well. They go on to contend that the individual citizen's interest in constitutional provisions about the economic role of the government can be expressed essentially in terms of external economies and diseconomies. Occasionally experience under *laissez faire*, because of such externalities, may give an individual an incentive to support constitutional provisions that allow government intervention in the economy. But since in time the government will presumably act to the disadvantage of the individual he will weigh the cost of any difficulties experienced under *laissez faire* against the presumed costs or externalities that government intervention will bring.

Because of the assumed long-run disadvantages of government interventions, Buchanan and Tullock suggest that voluntary cooperation through private organizations should sometimes take the place of government action in dealing with external economies and diseconomies. Here they fall into a serious logical error. When large numbers of people are involved, there is no incentive for any one of them voluntarily to support an organization dealing with the problems posed by externalities. If a voluntary organization were formed to alleviate the problem posed by an externality, those who did not participate or pay their share of the costs would benefit as much as those who did. Accordingly no one would have an incentive voluntarily to support the

organization. Suppose a voluntary organization were formed to provide for the defense of the nation. Those citizens who did not help sustain this voluntary organization would inevitably be protected from aggression as well as those who did: everyone in the country would be protected by the external economy of the expenditure of those who supported the defense organization to protect themselves. Accordingly no one would have an incentive to support a voluntary defense establishment. It is well known that for this reason defense must be provided by a government with the power to levy taxes. Neither would an individual in a city suffering from the smoking factory chimneys of Pigou's classic example have any incentive to participate in a voluntary organization that would bribe or coerce the factory owners to eliminate the smoke problem, since no one could keep nonparticipants from enjoying the clean air that resulted from the organization's efforts.

Buchanan and Tullock confuse the reader here by giving examples of types of situations in which voluntary organizations have been formed to deal with what are (allegedly) externalities. By searching through the relevant footnotes (in the back of the book) the reader can discover that the authors define ordinary economies of scale as external diseconomies (p. 345). The potential profits that a group of firms would make if they merged or formed a voluntary organization to take advantage of the economies of large scale production are called opportunity costs which in turn are defined as external diseconomies. But this is absurd, for if any potential profit is an opportunity cost and any opportunity cost is an external diseconomy, then there are external diseconomies wherever there are unexploited profits. Voluntary or private enterprise will in time no doubt take care of any misallocations of resources that result from unexploited profit opportunities, but to define these unexploited profit opportunities as externalities, and therefore to deny that government action will be needed to cure the misallocations of resources resulting from externalities, is merely to create confusion by giving words meanings that are the opposite of those they have had in the past.

Buchanan and Tullock do however concede that some externalities need to be handled by the government. They then develop a model with which they attempt to show that a democratic government operating by majority rule will systematically tend to adopt inefficient or Pareto nonoptimal policies. They argue that a government that requires unanimous consent will on the other hand adopt only those policies that would be justified by the welfare criterion that the gainers compensate the losers, for only a policy which would leave everyone at least as well off as before would win unanimous consent. Considerations such as these in their opinion tend to explain and justify the network of checks and balances and other obstacles to majority rule in the U.S. political system. They suggest that constitutional changes, and economic policies that benefit only special groups, should be permitted only if they can muster overwhelming, if not unanimous, support.

While the authors' practical conclusions are not always novel, their theoretical contributions are distinctly original. Because of these interesting theoretical constructions, their book deserves the careful attention and criticism of economists and social scientists generally.

MANCUR OLSON, JR.

U. S. Air Force Academy and Princeton University

TITLES OF NEW BOOKS

General Economics; Methodology

BECKERATH, E. VON. Lynkeus. Gestalten und Probleme aus Wirtschaft und Politik. Tübingen: J. C. B. Mohr (Paul Siebeck), 1962. Pp. 354.

BECKERATH, E. VON, POPITZ, H. SIEBECK, H. G. AND ZIMMERMAN, H. W., ed. Anitdöron. Edgar Salin zum 70. Geburtstag. Tübingen: J. C. B. Mohr (Paul Siebeck), 1962. Pp. 305.

DAVIDSON, R. K., SMITH, V. L. AND WILEY, J. W. Economics: an analytical approach. Rev. ed. Homewood, Ill.: Irwin, 1962 Pp. xviii, 460. \$7.50.

DIMOCK, M. E. The new American political economy: a synthesis of politics and economics. New York: Harper, 1962. Pp. 306.

FERBER, R. AND VERDOORN, P. J. Research methods in economics & business. New York: Macmillan, 1962. Pp. xiv, 573. \$9.

FRIEDMAN, M. WITH FRIEDMAN, R. D. Capitalism and freedom. Chicago: Univ. of Chicago Press, 1962. Pp. v, 202. \$3.95.

GREISS, F. AND MEYER, F. W., ed. Wirtschaft, Gesellschaft und Kultur. Festgabe für Alfred Müller-Armack. Berlin: Duncker & Humblot, 1961. Pp. xvii, 680.

HAMILTON, E. J., REES, A. AND JOHNSON, H. G., ed. Landmarks in political economy—selections from the *Journal of Political Economy*. Chicago: Univ. of Chicago Press, 1962. Pp. xii, 622. \$10; paper, 2 vols., \$2.45 each.

A distinguished collection of articles that have appeared in a distinguished economic journal. The earliest one included is by Thorstein Veblen (and appeared in Volume 1, 1892-93) and the most recent ones (by Anthony Downs and Martin J. Bailey) appeared in 1957. Some of the papers included have already been reprinted elsewhere. The volume will be a very useful one.

KRISHNAN KUTTY, G. Essays in economic theory and applied economics. Trivandrum: Uma Book Trades, 1961. Pp. 62. Rs 1.

MENEGAZZI, G. I fondamenti dell'ordine vitale dei popoli. Vol. 2, Fondamenti nuovi delle scienze economiche. Vol. 3, Il fondamento scientifico del circuito economico-sociale. Vol. 4, La sinergia economico-sociale nello sviluppo storico del solidarismo vitale comunitario. Milan: A. Giuffrè, 1962. Pp. 470; 463; 562. L. 2.500; L. 2.500; L. 3.000.

ZIMMERMAN, I. A guide to current Latin American periodicals—humanities and social sciences. Gainesville: Kallman, 1961. Pp. x, 357. \$20.

This is a very comprehensive and useful inventory, by countries and by subject-matter areas, of the periodicals in Latin America. The 14 subject-matter fields include economics, labor and social welfare, international relations, and statistics in addition to such fields as anthropology, history, political science, sociology, etc. There are 26 annotated lists of periodicals by countries (each periodical is described briefly), followed by subject-matter lists. There are 102 economics periodicals listed, plus 31 in labor and social welfare, 26 in international relations, and 37 in statistics.

Economie et société—Wirtschaft und Gesellschaft. In honor of Prof. D. E. Kalitsounakis on the occasion of his 70th birthday. Athens: Lib. "Hestia," 1961. Pp. xiv, 544.

International bibliography of the social sciences. Vol. 9, International bibliography of economics, 1960. Prepared by the Internat. Com. for Soc. Sci. Documentation, in French and English. Chicago: Aldine Pub. Co.; London: Stevens & Sons, 1962. Pp. 553. \$10.

Ordo—Jahrbuch für die Ordnung von Wirtschaft und Gesellschaft. Vol. 13. Düsseldorf: Helmut Küpper, 1962. Pp. 548. DM 54.80.

Proceedings of the thirty-sixth annual conference of the Western Economic Association, Seattle, Washington, August 24-25, 1961. L. Nabers, Univ. of Utah, editor. Salt Lake City: Western Econ. Assoc., 1962. Pp. 61.

**Price and Allocation Theory; Income and Employment Theory;
Related Empirical Studies; History of Economic Thought**

ALBACH, H. Investition und Liquidat. Die Planung des optimalen Investitionsbudgets. Wiesbaden: Gabler, 1962. Pp. 332.

BAUDIN, L. Frédéric Bastiat. Paris: Dalloz, 1962. Pp. 168. NF 10.

FOURASTIE, J. Documents pour l'histoire et la théorie des prix. Vol. 2, Études et mémoires. Centre d'études écon., no. 51. Paris: A. Colin, 1961. Pp. viii, 685. NF 40.

FRIEDMAN, M. Price theory—a provisional text. Chicago: Aldine, 1962. Pp. 285. Paper, \$6.

GREFTEGREFF, K. Inntekt og beslektede begreper i økonomisk teori. (Income and related concepts in economic theory.) With an English summary. Oslo: Oslo Univ. Press, 1962. Pp. 150.

"The fundamental idea in our analysis is that a distinction must be made between the concept of income and the rules for measurement of income, . . ." Part I covers the period from Cantillon to Marx; Part II, the German school and later theories; Part III, "The definition of income in circuit systems from our own time."

HENDERSON, H. Supply and demand. Cambridge econ. handbooks no. 3. Orig. pub. 1921. Chicago: Univ. of Chicago Press, 1962. Pp. xi, 142. Paper, \$1.35.

ISMAR, H., LANGE, G. AND V. SCHWEINITZ, H. Die Konsum- und Investitionsfunktion. Untersuchung für die Bundesrepublik Deutschland. Cologne and Opladen: Westdeutscher Verlag, 1962. Pp. 419. DM 76.

LEKACHMAN, R., ed. The varieties of economics—documents, examples and manifestoes. 2 vols. Cleveland: World Pub. Co., 1962. Pp. 384; 317. Paper, \$1.95 each.

"The two volumes of this book claim as their single major objective the illustration of the proposition that the economic view of life has had a rich and varied history." The seventy selections are arranged, chronologically in each case, under the following topics: Economics and Salvation; The Heroic Statesman; The Age of *Laissez-Faire*; The Economics of Utopia; Economic Reform; The Economics of Revolution; The Techniques of Economics: Theory, Measurement, History.

LIPÍŃSKI, E. De Copernic à Stanislas Leszczyński—la pensée économique et démographique en Pologne. Paris: Presses Univ. de France; Warsaw: Państwowe Wydawnictwo Naukowe, 1961. Pp. xxiii, 342. NF 18.

LLAU, P. La détermination des taux d'intérêt—étude des théories économiques contemporaines. Paris: Ed. Cujas, 1961. Pp. v, 444.

A review of interest theories from the Canonists to the present—but with the most attention given to contemporary theorists. Interest theories are classified into three categories: real, monetary, and synthetic. Among the real theories treated are those of Bohm-Bawerk and Irving Fisher, Monetary: Keynes, Joan Robinson, Hicks. Synthetic: Somers, de Villey, Modigliani, Allais, Lutz, Patinkin, Lange, Timlin, Perroux, Samuelson, and many others. The review is a critical one.

PORTER, E. O. Fallacies of Karl Marx. El Paso: Texas Western College Press, 1962. Pp. xxxiv, 96. \$5.

ROBINSON, E. A. G. The structure of competitive industry. Cambridge econ. handbooks no. 6. Orig. pub. 1931. Chicago: Univ. of Chicago Press, 1962. Pp. xii, 156. Paper, \$1.35.

ROBINSON, J. Exercises in economic analysis. New York: St. Martin's Press; London: Macmillan, 1961. Pp. 20, 242. Paper, \$1.95.

SELIGMAN, B. B. Main currents in modern economics—economic thought since 1870. New York: Free Press of Glencoe, 1962. Pp. xiv, 887. \$11.75.

SYLOS-LABINI, P. Oligopoly and technical progress. Transl. from Italian by E. Henderson. Harvard econ. stud. vol. 121. Cambridge: Harvard Univ. Press, 1962. Pp. xiii, 206. \$4.75. Original edition was reviewed in the March 1959 issue of the *Review*, Pp. 159-60.

Economic History; Economic Development; National Economies

- ALEXANDER, R. J. A primer of economic development. New York: Macmillan, 1962. Pp. xiv, 218. \$5.
- ANTWEILER, A. Entwicklungshilfe—Versuch einer Theorie. Trier: Paulinus-Verlag, 1962. Pp. 212.
- BAUDIN, L. L'état jésuite du Paraguay: une théocratie socialiste. Paris: Génin, 1962. Pp. 96. NF 8.
- BAUER, P. T. AND YAMEY, B. S. The economics of under-developed countries. Cambridge econ. handbooks no. 1. Orig. pub. 1957. Chicago: Univ. of Chicago Press. 1962. Pp. xiii, 271. Paper, \$1.75.
- BENVENISTE, G. AND MORAN, W. E., Jr. Handbook of African economic development. New York: Praeger for Stanford Research Inst., 1962. Pp. vii, 178. \$5.50.
- BETTELHEIM, C. L'Inde indépendante. Paris: A. Colin, 1962. Pp. 525. NF 30.
- BEHANDARI, K. C. Nationalisation of industries in India [Doctrinaire adherence redundant]. Calcutta: Academic Pub., 1962. Pp. xi, 221. Rs 10.
- CAIRE, G. L'économie Yougoslave. Econ. et civilisation no. 4. Paris: Ed. Ouvrières, 1962. Pp. 188. NF 10.50.
- DAVIN, L. E., DEGEER, L. AND PAELINCK, J. Dynamique économique de la région liégeoise. Paris: Presses Univ. de France, 1959. Pp. 358.
- DE ME0, G. Saggi di statistica economica e demografica sull' Italia meridionale nei secoli XVII e XVIII. Rome: Istituto Stat. Econ. dell'Univ. di Roma, 1962. Pp. vii, 311. L. 2.800.
- DUBY, G. L'Economie rurale et la vie des campagnes dans l'Occident méd'éval: France, Angleterre, Empire IXè-XVè siècles. 2 vols. Paris: Aubier, 1962. Pp. 823. NF 36.
- DUNN, E. S., JR. Recent Southern economic development—as revealed by the changing structure of employment. Soc. sci. monogr. no. 14. Gainesville: Univ. of Florida Press, 1962. Pp. 85. Paper, \$2.
- ELKAN, W. The economic development of Uganda. London: Oxford Univ. Press, 1961. Pp. viii, 72. 4s.
- ERHARD, L. Deutsche Wirtschaftspolitik—Der Weg der sozialen Marktwirtschaft. Düsseldorf: Econ-Verlag; Frankfurt am Main: Knapp, 1962. Pp. 638.
- FEI, J. C. H. An analysis of the long-run prospect of economic development in Pakistan. Monogr. in econ. of develop. no. 9. Karachi: Inst. of Develop. Econ., 1962. Pp. iv, 95. Rs 3.
- FLINN, M. W. Men of iron—the Crowleys in the early iron industry. Hist., philosophy and econ., no. 14. Edinburgh: Edinburgh Univ. Press; Chicago: Aldine, distrib., 1962. Pp. xii, 270. \$8.75.
- FORRESTER, M. W. Kenya to-day—social prerequisites for economic development. Ser. maior, vol. 7. The Hague: Mouton for Internat. Inst. Soc. Stud., 1962. Pp. 179. f 15.
- FOSTER, M. S. "Out of small beginnings . . ."—an economic history of Harvard College in the Puritan period (1636 to 1712). Cambridge: Belknap Press of Harvard Univ. Press, 1962. Pp. xvi, 243. \$6.25.
- FUSFELD, D. R., ed. The Michigan economy: prospects and problems. A symposium presented at the Economics Section, Michigan Academy of Science, Arts, and Letters, Ann Arbor, Michigan, March 23, 1962. Kalamazoo: W. E. Upjohn Inst. for Employment Research, 1962. Pp. 47.
- Contributions by: H. C. Taylor, N. Barcus, W. L. Ginsburg and P. W. McCracken.
- GEARY, R. C., ed. Europe's future in figures. ASEPELT, vol. 1. Amsterdam: North-Holland Pub. Co., 1962. Pp. viii, 343. \$9.
- Contributions by: J. Benard, V. Cao-Pinna, B. M. Deakin, R. Frisch, R. C. Geary,

- Groupe D'Etudes Belges, F. Kneschaurek, R. Kregel, J. Sandee, C. T. Saunders, J. R. N. Stone and J. A. C. Brown.
- GERRITSEN, J. C. Organizational development in Western Europe affecting research and development. The Hague: Org. for Indus. Research T. N. O., *s.d.* Pp. 27, mimeo.
- GOLDSTEIN, S. AND MAYER, K. B. Metropolitanization and population change in Rhode Island. State planning sec. pub. no. 3. [Providence]: Rhode Island Develop. Council, [1962]. Pp. vii, 60. Free.
- GREEN, L. P. AND FAIR, T. J. D. Development in Africa—a study in regional analysis with special reference to Southern Africa. Johannesburg: Witwatersrand Univ. Press, 1962. Pp. vii, 203. \$5.25.
- HAX, K. Japan, Wirtschaftsmacht des Fernen Ostens. Ein Beitrag zur Analyse des wirtschaftlichen Wachstums. Cologne: Westdeutscher Verlag, 1961. Pp. 632.
- HEILBRONER, R. L. The making of economic society. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xiii, 242. \$4.95; paper, \$2.95.
- HESSE, H. Der Aussenhandel in der Entwicklung unterentwickelter Länder unter besonderer Berücksichtigung Lateinamerikas. Tübingen: J. C. B. Mohr (Paul Siebeck), 1961. Pp. 101. DM 15.70; paper, DM 12.20.
- HILTON, G. W. The Great Lakes car ferries. Berkeley, Calif.; Howell-North, 1962. Pp. xv, 282. \$6.
- HINKELAMMERT, F. J. Der Wachstumsprozess in der Sowjetwirtschaft: Eine Untersuchung der Produktionsstruktur, des Lenkungsprozesses und des Volkseinkommens. Berlin: Duncker & Humblot, 1961. Pp. 115.
- JEHRING, J. J., ed. Solving problems of productivity in a free society. Papers presented at a symposium, Wingspread, Racine, Wisconsin, Nov. 15 and 16, 1961. Madison: Center for Productivity Motivation, School of Commerce, Univ. of Wisconsin, 1962. Pp. iii, 77. \$1.
- LAGOS ESCOBAR, R. La concentracion del poder economico—su teoria—realidad Chilena. Santiago: Ed. del Pacifico, 1961. Pp. 181.
- LANIER, E. La compagnie générale transatlantique. Paris: Plon, 1962. Pp. 236. NF 11.40.
- LAVIGNE, M. L. Le capital dans l'économie soviétique. Develop. econ. no. 7. Paris: SEDES, 1961. Pp. 351. NF 25.
- MALENBAUM, W. Prospects for Indian development. New York: Free Press of Glencoe, 1962. Pp. 325. \$6.
- MEYNAUD, J. Nouvelles études sur les groupes de pression en France. Cahiers de Fond. Nat. Sci. Pol. no. 118. Paris: A. Colin, 1962. Pp. 468. NF 23.
- NANJUNDAN, S., ROBISON, H. E. AND STALEY, E. Economic research for small industry development—illustrated by India's experience. New York: Asia Pub. House; Taplinger, distrib., for Internat. Indus. Develop. Center, Stanford Research Inst., 1962. Pp. xii, 316. \$7.75.
- NARAYAN, S. Trends in Indian planning. New York: Asia Pub. House; Taplinger, distrib., 1962. Pp. viii, 139. \$4.50.
- NEALE, W. C. Economic change in rural India—land tenure and reform in Uttar Pradesh, 1800-1955. Yale stud. in econ. no. 12. New Haven and London: Yale Univ. Press, 1962. Pp. xii, 333. \$7.50.
- NEVIN, E. Capital funds in underdeveloped countries. London: Macmillan, 1961. Pp. xv, 110. 18s.
- PARRILLO, F. Teoria della politica economica e pianificazione regionale. Milan: A. Giuffrè, 1962. Pp. 150. L. 1.200.
- PETCH, G. A. Economic development and modern West Africa. London: Univ. of London Press, 1961. Pp. 224. 11s. 6d.
- PIATIER, A. Equilibre entre développement économique et développement social. Paris: Génin, 1962. Pp. 182. NF 16.

- POLLARD, S. The development of the British economy 1914-1950. New York: St. Martin's Press; London: Edward Arnold, 1962. Pp. ix, 422. \$7.50.
- ROBERTS, R. S., JR. Economic development, human skills and technical assistance—a study of I.L.O. technical assistance in the field of productivity and management development. Geneva: E. Droz; Paris: Minard, 1962. Pp. 157. 12 sw. fr.
- RONDOT, J. La compagnie française des pétroles, du franc-or au pétrole franc. Hist. des grandes entreprises, no. 7. Paris: Plon, 1962. Pp. 185. NF 9.
- ROY, J.-A. Histoire de la famille Schneider et du Creusot. Paris: Sirey, 1962. Pp. 158. NF 10.
- TANDON, B. C., ed. The third five year plan & India's economic growth. Allahabad: Chaitanya, 1962. Pp. 324. \$3.50.
- THORNER, D. AND THORNER, A. Land and labour in India. New York: Asia Pub. House; Taplinger, distrib., 1962. Pp. ix, 227. \$8.50.
- USIEVICH, M. A. Razvitye Socialisticheskoy Ekonomiki Vengrii. (Development of the Socialist economy of Hungary.) Moscow: Acad. of Sci., 1962. Pp. 216.
- WALINSKY, L. J. Economic development in Burma 1951-1960. New York: The Twentieth Century Fund, 1962. Pp. xxvii, 680. \$10.
- WARRINER, D. Land reform and development in the Middle East—a study of Egypt, Syria, and Iraq. 2nd ed. New York: Oxford Univ. Press for Royal Inst. of Internat. Affairs, 1962. Pp. xi, 238. \$3.40.
- WATERSTON, A. Planning in Morocco—organization and implementation. Baltimore: Johns Hopkins Press for Econ. Develop. Inst., Internat. Bank for Reconstruction and Develop., 1962. Pp. viii, 72. \$2.50.
- . Planning in Yugoslavia—organization and implementation. Baltimore: Johns Hopkins Press for Econ. Develop. Inst., Internat. Bank for Reconstruction and Develop., 1962. Pp. ix, 109. \$3.
- WEBER, A. Sowjetwirtschaft heute—Schwächen und Stärken. Berlin: Duncker & Humblot, 1962. Pp. 117. DM 5.80.
- WELLS, F. A. AND WARMINGTON, W. A. Studies in industrialization: Nigeria and the Cameroons. New York: Oxford Univ. Press for Nigerian Inst. of Soc. and Econ. Research, 1962. Pp. vii, 266. \$5.60.
- YAMAMOTO, H. Development of agricultural collectivization in China. Bull. no. 5. Tokyo: Nat. Research Inst. of Agric., 1961. Pp. 50.
- ZALESKI, E. Planification de la croissance et fluctuations économiques en U.R.S.S. Vol. 1, 1918-1932. Develop. econ. no. 3. Paris: SEDES, 1962. Pp. xxix, 371. NF 29.
- Communist China 1955-1959—policy documents with analysis. Cambridge: Harvard Univ. Press for Center for Internat. Affairs and East Asian Research Center, 1962. Pp. xii, 612. \$10.
- "This volume of forty-eight documents from Communist China covers a five-year period of intense revolutionary change. It begins with 1955, which saw the publication, after a delay of two years, of the first Five-year Plan. It closes during the months of stock-taking, some of it clearly painful, which followed the massive celebration of the regime's tenth anniversary in October 1959." (From the foreword.)
- Current problems of planned economy. (Five years of research by NCAER). New Delhi: Nat. Council of Applied Econ. Research, 1962. Pp. viii, 115. Rs 8.25.
- Economic developments in the Middle East 1959-1961. Suppl. to *World economic survey*, 1961. Dept. of Econ. and Soc. Affairs pub. New York: Sales Sec., U.N., 1962. Pp. ix, 183. \$2.50.
- Economic developments in South America. Report of the Subcommittee on Inter-American Economic Relationships of the Joint Economic Committee, 87th Cong., 2nd sess. Washington: Supt. Doc., 1962. Pp. v, 12. 10c.
- Economic survey of Pakistan 1961-62. Rawalpindi: Econ. Adviser to the Govt. of Pakistan, Ministry of Fin., 1962. Pp. iv, 172.

- Looking ahead—prospects of India's economy and trade in 1981. New Delhi: Nat. Council of Applied Econ. Research, 1962. Pp. viii, 102. Rs 6.
- Materialnoe stimulirovanie v narodnom khoziaistve Vengrii. (Studies on the material incentives in the socialist economy of Hungary.) Budapest: Pub. House of the Hungarian Academy of Sciences, 1962. Pp. 100. \$2.
- The problems of the arid zone. Proceedings of the Paris Symposium. UNESCO arid zone research pub. no. 18. New York: Columbia Univ. Press, 1962. Pp. xii, 481. \$15; paper, \$13.50.
- Théorie et politique de l'expansion régionale. Actes du Colloque international de l'Institut de Science Economique de l'Université de Liège (21-23 avril 1960). Brussels: Lib. Encyclopédique, S.P.R.L., 1961. Pp. vii, 619.

Statistical Methods; Econometrics; Social Accounting

- GINI, C. L'ammontare e la composizione della ricchezza delle nazioni. 2nd ed. Storia e dottrine econ. no. 13. Turin: U.T.E.T., 1962. Pp. xxxix, 834. L. 8.500.
- GOLDSMITH, R. W. The national wealth of the United States in the postwar period. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1962. Pp. xxix, 434. \$12.50.
- HOLTE, F. C. Economic shock-models—studies in the theory of their construction. Oslo: Norwegian Univ. Press, 1962. Pp. 116.
- KROMPHARDT, HENN, AND FÖRSTNER. Lineare Entscheidungsmodelle. Berlin: Springer, 1962.
- MENGES, G. Ökonometrie. Wiesbaden: Th. Gabler, 1961. Pp. 251. DM 22.50.
- NORTON, J. D. Capacity statistics: problems and potential. Paper prepared at the request of the Federal Statistics Users' Conference. Washington: Nat. Planning Assoc., 1962. Pp. 30.
- REICHMANN, W. J. Use and abuse of statistics. New York: Oxford Univ. Press, 1962. Pp. 336.
- The flow-of-funds approach to social accounting—appraisal, analysis, and applications. NBER stud. in income and wealth vol. 26. Princeton: Princeton Univ. Press for Nat. Bur. Econ. Research, 1962. Pp. 487. \$10.
- Measures of productive capacity. Hearings before the Subcommittee on Economic Statistics of the Joint Economic Committee, 87th Cong., 2nd sess., May 14-24, 1962. Washington: Supt. Docs., 1962. Pp. 172.
- The statesman's year-book—statistical and historical annual of the states of the world for the year 1962-1963. Ninety-ninth publication. Ed. by S. H. Steinberg. New York: St. Martin's Press, 1962. Pp. xxviii, 1702. \$9.50.
- Statistical abstract of the United States, 83rd ed. Washington: Dept. of Commerce, 1962. Pp. xii, 1036. \$3.50.
- Statistical outline of India 1961. Bombay: Vora for Tata Industries, Dept. of Econ. & Stat., 1961. Pp. vii, 88. Rs 3.
- Yearbook of national accounts statistics. Stat. Office U.N., Dept. of Econ. and Soc. Affairs. In English and French. New York: Sales Sec., U.N., 1962. Pp. xxiv, 305. Paper, \$4.

Economic Systems; Planning and Reform; Cooperation

- DUBAIL, R. Une expérience d'économie dirigée: l'Allemagne nationale socialiste. Paris: P. Dupont, 1962. Pp. 171. NF 15.
- JIPP, A. Berechenbare Größen in der Volks- und Verkehrswirtschaft. Grenzen und neue Möglichkeiten der Vorausplanung. Munich: Oldenbourg, 1962. Pp. 137.
- PROBST, A. E. Razmeshchenie Socialisticheskoy Promyshlennosti. (Location of Socialist industry.) Moscow: Econ. Pub. House, 1962. Pp. 340.
- ROSROW, E. V. Planning for freedom—the public law of American capitalism. New Haven and London: Yale Univ. Press, 1962. Pp. xiv, 405. Paper, \$1.95.
- First pub., 1959.

Business Fluctuations

- MATTHEWS, R. C. O. The business cycle. Cambridge econ. handbooks no. 4. Orig. pub. 1959. Chicago: Univ. of Chicago Press, 1962. Pp. xv, 300. Paper, \$1.95.
- ZEITEL, G. AND PAHLKE, J., ed. Konjunktuelle Stabilität als wirtschaftspolitische Aufgabe. Tübingen: J. C. B. Mohr (Paul Siebeck), 1962. Pp. vii, 170. DM 25.
- ZIJLSTRA, J. Möglichkeiten und Grenzen der Konjunkturpolitik. Kieler stud. n.s. no. 24. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1962. Pp. 16. DM 1.50.
- Inventory fluctuations, price level changes, and economic growth. Materials prepared for the Joint Economic Committee, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. iv, 15.
- Measures of productive capacity. Report of the Subcommittee on Economic Statistics to the Joint Economic Committee, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. v, 20. 15c.
- The role of inventory changes during expansion and contraction. Materials prepared for the Joint Economic Committee, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 11.

Money, Credit and Banking; Monetary Policy; Consumer Finance; Mortgage Credit

- BRYANT, W. R. Mortgage lending—fundamentals and practices. 2nd ed. New York: McGraw-Hill, 1962. Pp. viii, 423. \$8.50.
- DIVISIA, F. Exposé d'économie. Vol. 2, Traitement économétrique de la monnaie, l'intérêt, l'emploi. Paris: Dunod, 1962. Pp. 230. NF 32.
- ERIKSSON, B. H. J. The concept and nature of money. Reykjavík: Helgafell, 1962. Pp. 76.
- GRIVET, P. La mobilisation des crédits bancaires en France. Paris: Libr. gen de Droit et de Jurisprudence, 1962. Pp. 292. NF 30.
- GROSECLOSE, E. The decay of money: a survey of Western currencies, 1912-1962. Monogr. no. 1. Washington: Inst. for Monetary Research, 1962. Pp. 32. \$1.
- IENGAR, H. V. R. Monetary policy and economic growth. Bombay: Vora, 1962. Pp. vii, 295. Rs 17.50.
- JOHNSON, H. G. Money, trade and economic growth—survey lectures in economic theory. Cambridge: Harvard Univ. Press, 1962. Pp. 199. \$4.50.
- LAMB, W. R. Group banking—a form of banking concentration and control in the United States. New Brunswick: Rutgers Univ. Press, 1962. Pp. 334. \$7.50.
- LAUDADIO, L. The competition for savings in the West. Research rept. no. 1. Reno: College of Bus. Admin., Bur. of Bus. and Econ. Research, Univ. of Nevada, 1962. Pp. 79.
- LERAT, E. Les structures économiques et la monnaie. Brussels: Lib. Encyclopédique, 1961. Pp. 180. 240. Bfr.
- LEUTNER, H. Geldstromtheorie und Liquiditätstheorie. Frankfurt am Main: Knapp, 1962. Pp. 200.
- MARKS, L., JR. AND COLEMAN, A. B. Cases in commercial bank management. New York: McGraw-Hill, 1962. Pp. xi, 401. \$7.95.
- MEIGS, A. J. Free reserves and the money supply. Chicago: Univ. of Chicago Press, 1962. Pp. xvi, 118. \$4.
- NEWLYN, W. T. Theory of money. New York: Oxford Univ. Press; Oxford: Clarendon Press, 1962. Pp. ix, 171. \$2.90.
- PAISH, F. W. Studies in an inflationary economy—the United Kingdom 1948-1961. New York: St. Martin's Press; London: Macmillan, 1962. Pp. ix, 336. \$10.
- PIPPING, H. E. Bankliv Genom Hundra År: Förenings-Banken i Finland 1862-1919, Nordiska Aktiebanken för Handel och Industri 1872-1919, Nordiska Föreningsbanken 1919-1962. Helsinki: Frenckellska Tryckeri Aktiebolaget, 1962. Pp. 443.

- . Sata Vuotta Pankkitointia: Suomen Yhdys-Pankki 1862-1919, Pohjoismaiden Osakepankki Kauppaa ja Teollisuutta Varten 1872-1919, Pohjoismaiden Yhdyspankki 1919-1962. Helsinki: Frenckellin Kirjapaino Osakeyhtiö, 1962. Pp. 460.
- ROBERTSON, D. H. Money. Cambridge econ. handbooks no. 5. Orig. pub. 1922. Chicago: Univ. of Chicago Press, 1962. Pp. xvii, 187. Paper, \$1.50.
- SETHI, J. D. Problems of monetary policy in an underdeveloped country—with special reference to India. New York: Asia Pub. House; Taplinger, distrib., 1961. Pp. xii, 336. \$6.50.
- SHINJO, H. History of the yen—100 years of Japanese money-economy. Kobe Econ. & Bus. Research ser. no. 1. Rokko, Kobe: Research Inst. for Econ. & Bus. Admin., Kobe Univ., 1962. Pp. vi, 205. \$6.50.
- Higher interest rates on time deposits of foreign governments. Hearings before the House Committee on Banking and Currency, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 156.
- Report for the year 1961. Athens: Bank of Greece, 1962. Pp. 80.

Public Finance; Fiscal Policy

- DRUMMOND, J. M. The finance of local government. London: Allen and Unwin, 1962. Pp. 256, 25s.
- GROVES, H. M., BARKIN, S. AND OTHERS. Reappraisal of business taxation. Symposium conducted by the Tax Institute, Dec. 7-8, 1961. Princeton: Tax Inst., 1962. Pp. xii, 242. \$6.
- HOLZMAN, R. S. The taxpayer's problem of proof. New York: Ronald, 1962. Pp. ix, 212. \$10.
- MAXWELL, J. A. Tax credits and intergovernmental fiscal relations. Washington: Brookings Inst., 1962. Pp. xiv, 202. \$3.75.
- OREWA, G. O. Taxation in Western Nigeria—the problems of an emergent state. Nigerian soc. and econ. stud., no. 4. New York: Oxford Univ. Press for Nigerian Inst. of Soc. and Econ. Research, 1962. Pp. xvii, 169. Paper, \$2.90.
- Bibliography on taxation in underdeveloped countries. Cambridge: Harvard Univ. Law School, 1962. Pp. 75. \$2.
- Compendium of state government finances in 1961. Bur. Census, G-SF61, no. 2. Washington: Supt. Docs., 1962. Pp. 65.
- Debt ceiling. Hearing before the Senate Committee on Finance, 87th Cong., 2nd sess., June, 26, 1962. Washington: Supt. Docs., 1962. Pp. 99.
- Periodic Congressional reassessment of federal grants-in-aid to state and local governments. [Washington]: Advisory Comm. on Intergovt. Rel., 1961. Pp. 67.
- Public works acceleration. Hearings before the Senate Committee on Public Works, 87th Cong., 2nd sess., April 12-13, 1962. Washington: Supt. Docs., 1962. Pp. 245.
- Revenue act of 1962. Hearings before the Senate Committee on Finance, 87th Cong., 2nd sess., April 3 through May 10, pts. 2-10. Washington: Supt. Docs., 1962. Pp. 373; 345; 58; 504; 443; 1112.
- Standby capital improvement act of 1962, no. 87-19. Hearings before the House Committee on Public Works, 87th Cong., 2nd sess., March 26-30, April 2-6, 1962. Washington: Supt. Docs., 1962. Pp. 721.
- Temporary increase in debt ceiling. Hearings before the House Committee on Ways and Means, 87th Cong., 2nd sess., on the President's request for a temporary increase . . . for the period July 1, 1962 through June 30, 1963. Washington: Supt. Docs., 1962. Pp. 109.

International Economics

- ARNOLD, H. J. P. Aid for developing countries, a comparative study. Chester Springs, Pa.: Dufour Editions, 1962. Pp. 159.

- BENHAM, F. Economic aid to underdeveloped countries. New York: Oxford Univ. Press for the Royal Inst. of Internat. Affairs, 1961. Pp. 121. \$2.
- CHAMBRE, H., SALTIEL, J.-P. AND NOWICKI, A. Tiers Monde et commerce des Pays de l'Est. Cahiers I.S.E.A., no. 124, ser. G., no. 13. Paris: Inst. Sci. Écon. Appliquée, 1962. Pp. 288.
- DE BANDT, J. Dimension du marché et optimum de production. Coll. du groupe de recherches marché commun, no. 3. Louvain and Paris: Nauwelaerts, 1962. Pp. xv, 299. Bfr. 275.
- DREIER, J. C., ed. The Alliance for Progress—problems and perspectives. Baltimore: Johns Hopkins Press, 1962. Pp. xviii, 146. \$3.95.
- FORD, A. G. The gold standard 1880-1914—Britain and Argentina. New York: Oxford Univ. Press, 1962. Pp. xii, 200. \$4.
- FRIEDRICH, C. J. AND HARRIS, S. E. Public policy—a yearbook of the Graduate School of Public Administration, Harvard University, 1961. Internat. econ. problems vol. 11. Cambridge: Grad. School of Pub. Admin., Harvard Univ., 1961. Pp. 466. \$7.
- HAHN, L. A. AND OTHERS. Internationale Währungs- und Finanzpolitik siehe beigefügten Prospekt. Berlin: Duncker & Humblot, 1961. Pp. 185. DM 18.60.
- HALLSTEIN, W. United Europe—challenge and opportunity. William L. Clayton lectures on international economic affairs and foreign policy, 1961-1962, Fletcher School of Law and Diplomacy, Tufts University. Cambridge: Harvard Univ. Press, 1962. Pp. x, 109. \$2.75.
- HARROD, R. F. International economics. Rev. ed. Cambridge econ. handbooks no. 2. Orig. pub. 1933. Chicago: Univ. of Chicago Press, 1962. Pp. xiii, 186. Paper, \$1.50.
- HIGGINS, B. United Nations and U. S. foreign economic policy. Stud. U.N. Project, M.I.T. Center for Internat. Stud. Homewood, Ill.: Irwin, 1962. Pp. viii, 235. Paper, \$3.75.
- KLAASSE, C. A. Monetary and financial aspects of Great Britain's entry into the European Economic Community. Address delivered at the National Congress of Economists, Netherlands Institute of Economists, Amsterdam. Amsterdam: Amsterdamsche Bank, 1962. Pp. 45.
- KONRAD, A. Zahlungsbilanzstörungen und wirtschaftliches Wachstum. Dargestellt am Beispiel der Vereinigten Staaten von Amerika und Westeuropas 1950-1959. Berlin: Duncker & Humblot, 1962. Pp. 172.
- KRISTENSEN, T. Die wirtschaftlichen Beziehungen zwischen dem Westen und den Entwicklungsländern. Kieler stud. n.s. no. 22. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1962. Pp. 13.
- LIEFTINCK, P. Recent trends in international monetary policies. Essays in internat. fin., no. 39. Princeton: Dept. of Econ., Princeton Univ., 1962. Pp. 22.
- MACHLUP, F. Plans for reform of the international monetary system. Special papers in internat. econ. no. 3. Princeton: Internat. Fin. Sec., Princeton Univ., 1962. Pp. 70. German version, Kieler stud. n.s. no. 23. Kiel: Inst. f. Weltwirtschaft, Univ. Kiel, 1962.
- MEADE, J. E., LIESNER, H. H. AND WELLS, S. J. Case studies in European economic union—the mechanics of integration. New York: Oxford Univ. Press for Royal Inst. of Internat. Affairs, 1962. Pp. viii, 424. \$6.10.
- MIKESELL, R. F. Some observations on the operation of the Alliance for Progress: the first six months. A study prepared for the Subcommittee on American Republics Affairs of the Senate Committee on Foreign Relations, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. vii, 22.
- , ed. U.S. private and government investment abroad. Eugene: Univ. of Oregon Books, 1962. Pp. xiv, 599. \$10.
- MORRIS, J. O. AND QVANEDER, C. R., WITH ARMSTRONG, A. AND HEMPEL, H. G. Afiliación y finanzas sindicales en Chile, 1932-1959. Santiago: Facultad de Ciencias Econ., Univ. de Chile, INSORA (Inst. Organización y Admin.), 1962. Pp. 101.

- NEUMARK, F. Wirtschafts- und Finanz- Probleme des Interventions- Staates. Tübingen: J. C. B. Mohr (Paul Siebeck), 1961. Pp. vii, 429. DM 35; paper, DM 29.80.
- NYDEGGER, A. Die westeuropäische Aussenwirtschaft in Gegenwart und Zukunft. Tübingen: J. C. B. Mohr (Paul Siebeck), 1962. Pp. viii, 169. DM 22; paper, DM 18.
- PERKINS, J. O. N. Britain and Australia: economic relationships in the 1950's. New York: Cambridge Univ. Press; Victoria: Melbourne Univ. Press, 1962. Pp. vii, 202. \$5.50.
- RAUSHENBUSH, S. The challenge to the Alliance for Progress. Washington: Pub. Affairs Inst., 1962. Pp. 89. \$1.
- SEIDENFUS, H. St. Beiträge zur Verkehrstheorie und Verkehrspolitik. Düsseldorf: Handelsblatt, 1961. Pp. 181.
- SWERLING, B. C. Current issues in commodity policy. Essays in internat. fin., no. 38. Princeton: Internat. Fin. Sec., Dept. of Econ., Princeton Univ., 1962. Pp. 41.
- WILD, J. E. The European Common Market. London: Lib. Assoc., 1961. Pp. 30. 2s. 6d.
- Bretton Woods Agreements act amendment. Hearings before the Senate Committee on Foreign Relations, 87th Cong., 2nd sess., March 30 and April 3, 1962. Washington: Supt. Docs., 1962. Pp. 74.
- Developments in commercial policy. GATT semi-annual survey, no. 4. Geneva: General Agreement on Tariffs and Trade, 1961. Pp. 70.
- The entry of Great Britain into the European Economic Community. Append. to pub. no. 34; pub. no. 36. Brussels: European League for Econ. Co-op., 1962. Pp. 36.
- EFTA's foreign trade during the first year of operation—1st July 1960-30th June 1961. Washington: Secretariat European Free Trade Assoc., *s.d.* Pp. 32.
- Foreign assistance act of 1962. Hearings before the Senate Committee on Foreign Relations, 87th Cong., 2nd sess., April 5-18, 1962. Washington: Supt. Docs., 1962. Pp. 643.
- Foreign assistance act of 1962. Pts. 3, 4, 5 and 6. Hearings before the House Committee on Foreign Affairs, 87th Cong., 2nd sess., March 27-29; April 2-9; April 10-16; April 17-18, 1962. Washington: Supt. Docs., 1962. Pp. 223; 210; 195; 110.
- Foreign assistance act of 1962. Report of the House Committee on Foreign Affairs, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 95.
- Foreign assistance act of 1962. Report of the Senate Committee on Foreign Relations, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 95.
- Foreign economic aid—a review of foreign economic aid to Pakistan. Rawalpindi: Govt. of Pakistan, Ministry of Fin., 1962. Pp. viii, 118.
- Foreign trade. Hearings before the Senate Committee on Commerce, 87th Cong., 2nd sess., April 2-4 and May 7, 1962. Washington: Supt. Docs., 1962. Pp. 97.
- Game theory, bargaining and international relations. *Journal of conflict resolution*, 6 (1). Ann Arbor: Center for Research on Conflict Resolution, 1962. Pp. 99.
- Investigation and study of the administration, operation, and enforcement of the Export Control act of 1949, and related acts. Report of the House Select Committee on Export Control, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 65.
- Problems concerning E.E.C. and E.F.T.A. Ser. of research works no. 3. Rome: General Confederation of Italian Indus., 1962. Pp. viii, 287. \$2.80.
- Trade expansion act of 1962. Hearings before the House Committee on Ways and Means, 87th Cong., 2nd sess., March 12-30, April 2-11, 1962. 6 pts. Washington: Supt. Docs., 1962. Pp. 4233.
- Trade expansion act of 1962. Hearings before the Senate Committee on Finance, 87th Cong., 2nd sess. Vol. 1. Washington: Supt. Docs., 1962.
- U. S. Participation in the UN—report by the President to the Congress for the year 1961. Dept. of State pub. no. 7413, Internat. Organization and Conf. ser. 33. Washington: Supt. Docs., 1962. Pp. xvi, 414. \$1.25.
- Yearbook of international trade statistics 1960. Stat. Office U.N., Dept. of Econ. and Soc. Affairs. New York: Sales Sec., U.N., 1962. Pp. 603. \$7.

Business Finance; Investment and Security Markets; Insurance

- BRIMMER, A. F. Life insurance companies in the capital market. East Lansing: Bur. Bus. and Econ. Research, Grad. School of Bus. Admin., Michigan State Univ., 1962. Pp. xxiv, 394. \$7.50.
- CLARKSON, G. P. E. Portfolio selection: a simulation of trust investment. Englewood Cliffs, N.J., 1962. Pp. x, 143. \$4.50.
- FRAINE, H. G. Valuation of securities holdings of life insurance companies. Homewood, Ill.: Irwin, 1962. Pp. xiv, 255. \$5.75.
- GERSDORFF, R. VON. Saving, credit and insurance in Brazil—their contribution to economic development. Ser. of econ. surveys, no. 1. Barbados: Govt. Printing Office, 1962. Pp. iv, 292. \$4.
- GREGG, D. W. Group life insurance—an analysis of concepts, contracts, costs, and company practices. 3rd ed. Homewood, Ill.: Irwin for Huebner Foundation for Ins. Ed., Univ. of Pennsylvania, 1962. Pp. 24, 373. \$6.75.
- GUTHEMANN, H. G. AND DOUGALL, H. E. Corporate financial policy. 4th ed. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xxiii, 776. \$11.35.
- HAOUR, P. La bourse. Paris: A. Colin, 1962. Pp. 224. NF 5.70.
- HENSLEY, R. J. Competition, regulation, and the public interest in nonlife insurance. Inst. of Bus. and Econ. Research, Univ. of California pub. Berkeley: Univ. of California Press, 1962. Pp. xii, 259. \$6.
- JOHNSON, R. W. Financial management. 2nd ed. Boston: Allyn and Bacon, 1962. Pp. xiii, 714. \$8.50.
- LEVY, M. E. Cycles in government securities. Pt. 1, Federal debt and its ownership. Stud. in bus. econ. no. 78. New York: Nat. Indus. Conf. Board, 1962. Pp. 177. \$3; \$15, non-associates.
- NIGAM, R. K. AND JOSHI, N. D. Corporate dividend trends during the period of industrial growth and planned economic development in India (1947-57). New Delhi: Manager of Pub., Govt. of India, 1962. Pp. ii, 116. Rs 11.
- PAQUET, P. Investissements et études du marché. Recherches écon., no. 7. Paris: Sirey, 1962. Pp. 180. NF 18.
- ROSEN, G. Some aspects of industrial finance in India. [New York]: Free Press of Glencoe for Center for Internat. Stud., M.I.T., 1962. Pp. xiv, 144. \$6.50.
- STEVENSON, W. W. Equity and long-term financing for small manufacturing firms in Minnesota. Minneapolis: Univ. of Minnesota, for Small Bus. Admin., 1962. Pp. 83.
- VANDELL, R. F. AND COLEMAN, A. B. Case problems in finance. 4th ed. Homewood, Ill.: Irwin, 1962. Pp. ix, 752. \$7.95.
- The finance of small and medium-sized business. London: C. D. Internat., 1961. Pp. 121.

Business Organization; Managerial Economics; Marketing; Accounting

- BREWER, S. H. Air cargo—the gold is in the terminals. Management ser. no. 5. Seattle: Faculty Research and Pub., College of Bus. Admin., Univ. of Washington, 1962. Pp. 19.
- BREWER, S. H. AND PARKER, D. D. Rhochromatics in the flow of parts and accessories—managing the movements of assembly, repair and replacement items. Management ser. no. 4. Seattle: Faculty Research and Pub., College of Bus. Admin., Univ. of Washington, 1962. Pp. 19.
- BUNZEL, J. H. The American small businessman. New York: Knopf, 1962. Pp. 318. \$4.95.
- CLEMENS R. Contribution à l'étude de l'entreprise et de la distribution des pouvoirs de décision. Sci. soc. et admin. des affaires, no. 4. Liège: Vaillant-Carmanne, 1961. Pp. 360. 290 Bfr.
- COLLIER, A. T. Management, men, and values. New York: Harper & Row, 1962. Pp. xiv, 235. \$5.

- DAUTEN, P. M., Jr., ed. Current issues and emerging concepts in management: readings from the Academy of Management. Boston: Houghton Mifflin, 1962. Pp. xiii, 333. \$4.75; paper, \$2.75.
- FOWLER, F. P., JR. AND SANDBERG, E. W. Basic mathematics for administration. New York: Wiley, 1962. Pp. xvii, 339. \$7.95.
- GORDON, G. G. The impact of Washington State legislation on effective retail competition. Bus. stud. ser. no. 2. Seattle: Faculty Research and Pub., College of Bus. Admin., Univ. of Washington, 1962. Pp. vii, 143.
- GUITTON, M. M. AND OTHERS. Méthodes quantitatives au service de l'entreprise. Paris: Dunod, 1962. Pp. 140. NF 15.
- HARLAN, N. E., CHRISTENSON, C. J. AND VANCIL, R. F. Managerial economics—text and cases. Homewood, Ill.: Irwin, 1962. Pp. xi, 679. \$7.
- HARRIS, R. AND SELDON, A. Advertising in action. London: Hutchinson for Inst. of Econ. Affairs, 1962. Pp. xiii, 346. 30s.; paper, 7s. 6d.
- JENNINGS, E. E. The executive—autocrat, bureaucrat, democrat. New York: Harper & Row, 1962. Pp. xiv, 272. \$4.50.
- KEITH, L. A. AND GUBELLINI, C. E. Introduction to business enterprise. New York: McGraw-Hill, 1962. Pp. x, 438. \$6.95.
- KILBOURN, W. The elements combined: a history of the Steel Company of Canada. Toronto: Clarke and Irwin, 1961. Pp. xxii, 334. \$6.50.
- KILGER, W. Flexible Plankostenrechnung Einführung in die Theorie und Praxis moderner Kostenrechnung. Cologne: Westdeutscher Verlag, 1961. Pp. 664.
- MCGUIRE, J. W., ed. Interdisciplinary studies in business behavior. Cincinnati: South-Western, 1962. Pp. vi, 247. \$4.
- MIDGETT, E. W. Introduction to accounting—a textbook for a one-term general education course in accounting on the college level. Two workbooks prepared to accompany text. Boston: Bruce Humphries, 1962. Pp. xviii, 283. \$5; \$3; \$1.75.
- MOORE, W. E. The conduct of the corporation. New York: Random House, 1962. Pp. xix, 292.
- MUELLER, G. G. Accounting practices in the Netherlands. Internat. bus. ser. stud. in accounting no. 1. Seattle: Faculty Research and Pub., College of Bus. Admin., Univ. of Washington, 1962. Pp. 34.
- POPESCU, O. Ensayos de economía de empresa. Buenos Aires: Lib. "El Ateneo" Ed., 1961. Pp. xviii, 163.
- PRESTON, L. E., ed. Managing the independent business. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. ix, 334. \$6.75.
- ROBERTS, A. L. Production management workbook. New York: Wiley, 1962. Pp. ix, 126. \$2.95.
- RUMPF, H. A. Corporate liquidations—for the lawyer and accountant. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. 238. \$17.50.
- SIMONDS, R. H., BALL, R. E. AND KELLEY, E. J. Business administration: problems and functions. Boston: Allyn and Bacon, 1962. Pp. xx, 535. \$7.50.
- THEOBALD, R. Profit potential in the developing countries. AMA research stud. no. 53. New York: Am. Management Assoc., 1962. Pp. 299. Distrib. gratis to members; extra copies, \$8; \$12, non-members.
- WILLIAMSON, J. P. AND AUSTIN, R. W. Law in business administration: text. Boston: Allyn and Bacon, 1962. Pp. viii, 167. \$2.95.
- ZIEGLER, R. J. Casebook in production management. New York: Wiley, 1962. Pp. xiii, 150. \$5.50; paper, \$3.95.
- Major disasters: policies and plans—a report prepared by the Panel on Policies and Plans for Major Disasters. New York: Financial Executives Inst., 1962. Pp. xiii, 122.
- Report on marginal costing. London: Inst. of Cost and Works Accountants, 1961. Pp. 79. 10s.

Industrial Organization; Government and Business; Industry Studies

- BAUCHET, P. *Propriété publique et planification. (Entreprises publiques non financières.) Techniques Auxiliaires Recherche Econ., no. 3.* Paris: Ed. Cujas, 1962. Pp. 352. NF 19.80.
- BOCZEK, B. A. *Flags of convenience—an international legal study.* Cambridge: Harvard Univ. Press, 1962. Pp. xvi, 323. \$8.
- BOURRIERES, P. WITH BERTRAND, J., LEDUC, M., TAVITIAN, R. AND VESSILIER, E. *L'Economie des transports dans les programmes de développement.* Paris: Presses Univ. de France, 1961. Pp. 200. NF 15.
- EDWARDS, H. R. *Competition and monopoly in the British soap industry.* New York: Oxford Univ. Press, 1962. Pp. xi, 270. \$5.60.
- FULLER, J. G. *The gentlemen conspirators—the story of the price-fixers in the electrical industry.* New York: Grove Press, 1962. Pp. 224. \$3.95.
- JAQUET, C. *Werte und Preise auf dem Weltmarkt neuzeitlicher Kunst.* Winterthur; P. G. Keller, 1962. Pp. viii, 141.
- KUCZYNSKI, J. *Die Geschichte der Lage der Arbeiter unter dem Kapitalismus. Pt. 1, Die Geschichte der Lage der Arbeiter in Deutschland von 1789 bis zur Gegenwart. Vol. 14, Dokumente und Studien zu Band 4, zur Frühgeschichte des deutschen Monopolkapitals und des Staatsmonopolistischen Kapitalismus.* Berlin: Akademie-Verlag, 1962. Pp. 240. DM 27.50.
- KUHN, T. E. *Public enterprise economics and transport problems.* Inst. of Bus. and Econ. Research, Univ. of Calif., pub. Berkeley: Univ. of California Press, 1962. Pp. xiii, 243. \$5.
- LENEL, H. O. *Ursachen der Konzentration unter besonderer Berücksichtigung der deutschen Verhältnisse.* Tübingen: J. C. B. Mohr (Paul Siebeck), 1962. Pp. viii, 260.
- LEVER, J. *The law of restrictive trade agreements.* London: Sweet & Maxwell, 1962. Pp. 88.
- MASSEL, M. S. *Competition and monopoly—legal and economic issues.* Washington: Brookings Inst., 1962. Pp. xiii, 477. \$6.75.
- MOHRING, H. D. AND HARWITZ, M. *Highway benefits, an analytical framework.* Evanston: Northwestern Univ. Press for Transportation Center, Northwestern Univ., 1962. Pp. 209.
- REDAL, T. T. *Pacific Coast marine cargo handling—analysis and potential.* Management ser. no. 6. Seattle: Faculty Research and Pub., College of Bus. Admin., Univ. of Washington, 1962. Pp. 28.
- ROWE, F. M. *Price discrimination under the Robinson-Patman act.* Boston: Little, Brown, 1962. Pp. xxx, 675. \$22.50.
- SAXENA, K. K. *Indian railways—problems and prospects: a study in the management and working of Indian railways.* Bombay: Vora, 1962. Pp. xxiv, 272. Rs 15.
- Antitrust problems of the space satellite communications system. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 87th Cong., 2nd sess. Pts. 1 and 2, April 6-17, 1962.* Washington: Supt. Docs., 1962. Pp. 282; 476.
- Concentration ratios in manufacturing industry 1958. Report prepared by the Bureau of the Census for the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary. Vol. 1.* Washington: Supt. Docs., 1962.
- Drug industry antitrust act. Pt. 6, Advertising provisions. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 87th Cong., 2nd sess., Jan. 30-31, Feb. 1-7, 1962.* Washington: Supt. Docs., 1962. Pp. 158. 15¢.
- Identical bidding in public procurement. Report of the Attorney General.* Washington: Supt. Docs., 1962. Pp. 434.
- Die Konzentration in der deutschen Wirtschaft. Dokumentation der parlamentarischen Diskussion, 1958-1960.* Bonn: Gesellsch. Stud. Strukturpol. Fragen, 1961. Pp. 76.

Legislation to strengthen penalties under the antitrust laws. Pt.2. Hearings before the Subcommittee on Antitrust and Monopoly of the Senate Committee on the Judiciary, 87th Cong., 2nd sess., March 9, 1962. Washington: Supt. Docs., 1962. Pp. 61.

Pyramiding of profits and costs in the missile procurement program. Pt. 2. Hearings before the Permanent Subcommittee on Investigations of the Senate Committee on Government Operations, 87th Cong., 2nd sess., April 11-18, 1962. Washington: Supt. Docs., 1962. Pp. 278.

Land Economics; Agricultural Economics; Economic Geography; Housing

ANDREWS, R. B. Urban growth and development—a problem approach. New York: Simmons-Boardman, 1962. Pp. xi, 420. \$7.50.

"The level of interpretation in this book is directed to interested laymen, to professional people in the fields of real estate and city administration, and to upper classmen of liberal arts colleges, schools of business administration, and city planning. While the bias of the discussions is strongly economic, depth and perspective are provided by appropriate admixtures of sociology, geography, law, and political science." (From the preface.)

BAZHENOV, I. I., LEONENKO, I. A. AND KHARCHENKO, A. K. The coal industry of the People's Republic of China. Washington: Joint Pub. Research Svce., 1962. Pp. 150.

CAPRONNIER-SPIELHAGEN, J. Comptes nationaux et régionaux de l'énergie. Recherches sur l'écon. française, no. 7. Paris: A. Colin, 1962. Pp. 540. NF 35.

COURTIN, R. AND MAILLET, P. Economie géographique. Paris: Dalloz, 1962. Pp. 617. NF 30.

DUMONT, R. Afrique Noire: développement agricole. Reconversion de l'économie agricole: Guinée, Côte d'Ivoire, Mali. Paris: Presses Univ. de France, 1961. Pp. 212. NF 8.

ELKAN, P. G. New Zealand's butter and cheese in the European economic community. Research paper no. 2. Wellington: New Zealand Inst. of Econ. Research, 1962. Pp. 85.

ENOS, J. L. Petroleum progress and profits—a history of process innovation. Cambridge: M. I. T. Press, 1962. Pp. xiii, 336. \$9.50.

GHEORGHIU-DEJ, GH. Report on the completion of the collectivization of agriculture and the reorganization of agricultural management, submitted to the Special Session of the Grand National Assembly, April 27, 1962. Bucharest: Meridians, 1962. Pp. 62.

GILLIES, J. AND MITTELBACH, F. Management in the light construction industry—a study of contractors in Southern California. Los Angeles: Real Estate Research Program, Grad. School of Bus. Admin., Univ. of California, 1962. Pp. x, 109. \$2.50.

GREENHUT, M. L. AND COLBERG, M. R. Factors in the location of Florida industry. Florida State Univ. stud. no. 36. Tallahassee: Florida State Univ., 1962. Pp. 108. \$3.

HEADY, E. O. Agricultural policy under economic development. Ames: Iowa State Univ. Press, 1962. Pp. ix, 682. \$10.50.

HEMMI, K. Japan's agriculture and anticipated trade liberalization. Bull. no. 6. Tokyo: Nat. Research Inst. of Agric., 1961. Pp. 36.

HERLEMANN, H. -H. Grundlagen der Agrarpolitik. Die Landwirtschaft im Wirtschaftswachstum. Berlin: Vahlen, 1961. Pp. 191.

JOHNSON, D. G. AND GUSTAFSON, R. L. Grain yields and the American food supply—an analysis of yield changes and possibilities. Chicago: Univ. of Chicago Press, 1962. Pp. xii, 146. \$3.50.

MILLER, E. W. A geography of manufacturing. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xiv, 490. \$9.50.

O'CONNOR, H. World crisis in oil. New York: Monthly Review Press, 1962. Pp. xiii, 433. \$7.50.

ÔTSUKI, M. Japanese agriculture and the direction of its development. Bull. no. 3. Tokyo: Nat. Research Inst. of Agric., 1961. Pp. 80.

———. Labour productivity and employment in Japanese agriculture. Bull. no. 4. Tokyo: Nat. Research Inst. of Agric., 1961. Pp. 55.

PLATE, R. AND WOERMANN, E. WITH GRUPE, D. *Landwirtschaft im Strukturwandel der Volkswirtschaft—analyse der Nachkriegsentwicklung in der Bundesrepublik Deutschland und Versuch einer Prognose unter Berücksichtigung der Auswirkungen des Gemeinsamen Marktes. Agrarwirtschaft sonderheft 14.* Hannover: Alfred Stroh, 1962. Pp. 96. DM 18.50; by subscription, DM 15.

POTTER, N. AND CHRISTY, F. T., JR. *Trends in natural resource commodities—statistics of prices, output, consumption, foreign trade, and employment in the United States, 1870-1957.* Baltimore: Johns Hopkins Press for Resources for the Future, 1962. Pp. ix, 568. \$17.50.

"In this volume Neal Potter and Francis T. Christy, Jr., present comprehensive consistent long-term series for the principal economic aspects of major natural resource commodities, from which they have derived aggregate measures for all resources and for major groups of resources throughout a significant period of the nation's growth." (From the preface by J. L. Fisher.)

RADA, E. L. *The Cal-Vet program—a study of state-financed housing in California.* Los Angeles: Real Estate Research Program, Grad. School of Bus. Admin., Univ. of California, 1962. Pp. xx, 173. \$4.50.

RIDLER, D. *Far East markets for New Zealand's meat and milk.* Research paper no. 3. Wellington: New Zealand Inst. of Econ. Research, 1962. Pp. 116.

SACOROFF, S. *Theorie der volkswirtschaftlichen Energiebilanzen. Ein Beitrag zur volkswirtschaftlichen Energetik und zur Messung der Produktivität.* Würzburg: Physica-Verlag, 1961. Pp. v, 220.

SINHA, R. P. *Food in India—an analysis of the prospects for self-sufficiency by 1975-76.* New York: Oxford Univ. Press, 1961. Pp. vii, 200. \$3.35.

SPENCE, H. *Portrait in oil—how the Ohio Oil Company grew to become marathon.* New York: McGraw-Hill, 1962. Pp. vii, 357. \$5.95.

TUCK, R. H. *An introduction to the principles of agricultural economics.* London: Longmans Green, 1961. Pp. v, 260. 25s.

VERNON, R. *The myth and reality of our urban problems. The Stafford Little lectures of 1961, with seminar discussion.* Cambridge: Joint Center for Urban Stud., M.I.T. and Harvard Univ.; Harvard Univ. Press, distrib., 1962. Pp. 84.

WOLLMAN, N. AND OTHERS. *The value of water in alternative uses—with special application to water use in the San Juan and Rio Grande Basins of New Mexico.* Albuquerque: Univ. of New Mexico Press, 1962. Pp. xxii, 426. \$10.

An adaptive program for agriculture. CED Statement on nat. policy. New York: Com. for Econ. Develop., 1962. Pp. 74. \$1.

Economic atlas of Madras State. New Delhi: Nat. Council of Applied Econ. Research, 1962. Pp. x, 138. Rs 35.

Inquiry into the strategic and critical material stockpiles of the United States. Pt. 3. Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Senate Committee on Armed Services, 87th Cong., 2nd sess., May 21-31, June 1 and 6, 1962. Washington: Supt. Docs., 1962. Pp. 408.

Long term projections of demand for and supply of selected agricultural commodities—1960-1961 to 1975-76. New Delhi: Nat. Council of Applied Econ. Research, 1962. Pp. xvii, 262. \$3.50.

Pacific Northwest power consumer preference. Hearing before the Subcommittee on Irrigation and Reclamation of the Senate Committee on Interior and Insular Affairs, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 110.

Petroleum exploration—capital requirements and methods of financing. U.N. Dept. of Econ. and Soc. Affairs. New York: Sales Sec., U.N., 1962. Pp. vi, 29. 50¢.

Problems of the softwood lumber industry. Pt. 1. Hearings before the Senate Committee on Commerce, 87th Cong., 2nd sess., April 16, June 14-18, 1962. Washington: Supt. Docs., 1962. Pp. 272.

Sugar act amendments of 1962. Report of the House Committee on Agriculture, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 90.

Wilderness and recreation—a report on resources, values, and problems. Report to the Outdoor Recreation Resources Review Commission by The Wildland Research Center, University of California. ORRRC stud. rept. 3. Washington: Supt. Docs., 1962. Pp. x, 352. \$1.75.

Chapter 6, by Irving Hoch, is an economic analysis of wilderness allocation problems.

Labor Economics

BAUM, S. The labor force of Hungary. Bur. Census, Internat. pop. stat. rept., ser. P-90, no. 18. Washington: Supt. Docs., 1962. Pp. ii, 34. 25¢.

BELCHER, D. W. Wage and salary administration. 2nd ed. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. viii, 598. \$7.95.

FESHBACH, M. The Soviet statistical system: labor force recordkeeping and reporting since 1957. Bur. Census, Internat. pop. stat. rept., ser. P-90, no. 17. Washington: Supt. Docs., 1962. Pp. vi, 99. 70¢.

HARMON, J. L. Public Services' International: an international labor study. Washington: Supt. Docs., 1962. Pp. 246.

JACOBS, P. Dead horse and the featherbird. Santa Barbara: Center for the Stud. of Democratic Inst., 1962. Pp. 62.

JOHNSTON, T. L. Collective bargaining in Sweden—a study of the labour market and its institutions. Cambridge: Harvard Univ. Press, 1962. Pp. 358. \$7.50.

KUCZYNSKI, J. Die Geschichte der Lage der Arbeiter unter dem Kapitalismus. Pt. 1, Die Geschichte der Lage der Arbeiter in Deutschland von 1789 bis zur Gegenwart. Vol. 2, Darstellung der Lage der Arbeiter in Deutschland von 1849 bis 1870. Berlin: Akademie-Verlag, 1962. Pp. 275. DM 28.

LANGLOIS, F. Les salariés agricoles en France. Etudes et mémoires, no. 54. Paris: A. Colin, 1962. Pp. xii, 220. NF 25.

MOBLEY, T. C. Union wages and hours: building trades, July 1, 1961, and trend 1907-61. BLS bull. no. 1316. Washington: Supt. Docs., 1962. Pp. 43.

NAVILLE, P. AND OTHERS. L'automation et le travail humain—rapport d'enquête (France 1957-1959). Paris: Centre Nat. de la recherche sci., 1961. Pp. 743. NF 68.

PETERSON, C. A. AND NORPEL, N. K. Iowa employment trends, 1947-1960. Research ser. no. 24. Iowa City: Bur. Lab. and Management, College of Bus. Admin., State Univ. of Iowa, 1962. Pp. 27.

RAFFAELE, J. A. Labor leadership in Italy and Denmark. Madison: Univ. of Wisconsin Press, 1962. Pp. xviii, 436. \$10.

ROBERTSON, D. J. The economics of wages. London: Macmillan, 1961. Pp. xii, 242. 21s.

ROCHEFORT, R. Le travail en Sicile—étude de géographie sociale. Paris: Presses Univ. de France, 1961. Pp. 363. NF 22.

SCHAEFFER, H. AND BAUMAN, A. Wages in nonmetropolitan areas, south and north central regions, October 1960; distribution of nonsupervisory workers in manufacturing and selected nonmanufacturing industries, by average straight-time hourly earnings. BLS rept. no. 190. Washington: Dept. of Lab., Bur. Stat., 1961. Pp. iv, 40.

SELLIER, F. AND TIANO, A. Economie du travail. Paris: Presses Univ. de France, 1962. Pp. viii, 636. NF 22.

SHUSTER, J., AARON, B. AND SUMMERS, C. W., ed. Public policy and collective bargaining. Indus. Rel. Research Assoc. pub. no. 27. New York: Harper & Row, 1962. Pp. viii, 248. \$4.50.

STELLUTO, G. L. Industry wage survey—eating and drinking places, June 1961. BLS bull. no. 1329. Washington: Supt. Docs., 1962. Pp. 55.

- TELLER, L. Worker participation in business management. House Committee on Education and Labor, print. Washington: Supt. Docs., 1961. Pp. 94.
- VAID, K. N. Growth and practice of trade unionism—an area study. Stud. in soc. work no. 15. Delhi: Delhi School of Soc. Work, Univ. of Delhi, 1962. Pp. xiii, 200. Rs-8. Particular attention is given to the development of trade unions in Delhi.
- YODER, D. Personnel management and industrial relations. 5th ed. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xviii, 667. \$7.95.
- Amendments to Davis-Bacon act, and a bill to establish a Works-hours act. Hearings before the Special Subcommittee on Labor of the House Committee on Education and Labor, 87th Cong., 2nd sess., March 8-13, 1962. Washington: Supt. Docs., 1962. Pp. 231.
- Digest of one hundred selected health and insurance plans under collective bargaining, winter 1961-62. BLS bull. no. 1330. Washington: Supt. Docs., 1962. Pp. 215.
- Digest of profit-sharing, savings, and stock purchase plans, winter 1961-62. Twenty selected plans prepared by D. R. Kittner. BLS bull. no. 1325. Washington: Supt. Docs., 1962. Pp. 43.
- Equal pay for equal work. Pts. 1 and 2. Hearings before the Select Subcommittee on Labor of the House Committee on Education and Labor, 87th Cong., 2nd sess., March 26-28, 1962; New York, April 27-28, 1962. Washington: [Supt. Docs.], 1962. Pp. 221; 120.
- Family characteristics of the long-term unemployed: a report on a study of claimants under the Temporary Extended Unemployment Compensation program 1961-1962. Interim report on the May 1961 survey. Washington: [Supt. Docs.], 1962. Pp. 206.
- Growth of labor law in the United States. Washington: Bur. of Lab. Standards, Dept. of Labor, 1962. Pp. 316.
- Housing for migrant agricultural workers—labor camp standards. Bur. Lab. Standards bull. no. 235. Washington: Supt. Docs., 1962. Pp. 105.
- Impact of imports and exports on employment. Report of the Subcommittee on the Impact of Imports and Exports on American Employment of the House Committee on Education and Labor, 87th Cong., 2nd sess. Washington: Supt. Docs., 1962. Pp. 162.
- The international labor scene. Proceedings of the Spring Meeting, Industrial Relations Research Association, Philadelphia, Pennsylvania, May 8-9, 1962. Madison: Indus. Rel. Research Assoc., Univ. of Wisconsin, 1962. Pp. 118.
- The labor market and social security—proceedings of the Fourth Annual Social Security Conference, January 23 and 24, 1962, Michigan Union, University of Michigan. Kalamazoo: W. E. Upjohn Inst. for Employment Research, 1962. Pp. vii, 168.
- Ocupacion y desocupacion. Iquique, Antofagasta, La Serena—Coquimbo, Valparaiso—Viña del Mar, Gran Santiago, Concepción, Valdivia, Puerto Montt, Castro—Marzo de 1962. Inst. Econ. pub. no. 46. Santiago: Inst. Econ. Univ. Chile, 1962. Pp. vii, 117.
- Plant relocation—industrial relations implications: a review based on the Glidden case. IRM no. 142. New York: Indus. Rel. Counselors, 1962. Pp. 51. \$1.75.
- The relationship between imports and employment—an analysis of 27 import-competing industries and 2 industry case studies. Washington: Bur. Lab. Stat., 1962. Pp. 143.
- Unemployment situation and outlook. Hearings before the Subcommittee on Employment and Manpower of the Senate Committee on Labor and Public Welfare, 87th Cong., 1st sess., Pittsburgh, Pa., Newark, N.J., Chester, Pa., Providence, R.I., Atlantic City-Bridgeton, N.J., Feb. 22-27, March 2-9, 1961. Washington: Supt. Docs., 1961. Pp. 528.
- Value of prime contracts awarded by federal agencies in areas of substantial unemployment—January-September, 1961. Dept. of Commerce, Area Redevelop. Admin. Washington: Dept. of Commerce, 1962. Pp. vii, 62. 25¢.
- Voprosy Planirovaniya Truda. (Problems of planning of labor.) Econ. Research Inst. of State Econ. Council of the USSR. Moscow: Econ. Pub. House, 1962. Pp. 351.
- Work hours standards act. Hearing before the Subcommittee on Labor of the Senate Committee on Labor and Public Welfare, 87th Cong., 2nd sess., May 1, 1962. Washington: Supt. Docs., 1962. Pp. 66.

Population; Welfare Programs; Consumer Economics

- CALDER, R. Common sense about a starving world. New York: Macmillan, 1962. Pp. 176. \$2.95.
- CIPOLLA, C. M. The economic history of world population. Baltimore: Penguin Books, 1962. Pp. 126. Paper, 95¢.
- COLE, D. AND UTTING, J. The economic circumstances of old people. Occas. papers on soc. admin., no. 4. Welwyn, Herts: Codicote Press, 1962. Pp. 139. 12s. 6d.
- HARRIS, S. E. Higher education: resources and finance. New York: McGraw-Hill, 1962. Pp. xxxviii, 713. \$9.95.
- KISER, C. V., ed. Research in family planning. Princeton: Princeton Univ. Press, 1962. Pp. xv, 662. \$12.50.
- Papers presented at a conference sponsored jointly by the Milbank Memorial Fund and the Population Council, Inc., held October 13-19, 1960, at the Carnegie Endowment International Center, New York City.
- KUNG, S. W. Chinese in American life—some aspects of their history, status, problems, and contributions. Seattle: Univ. of Washington Press, 1962. Pp. xv, 352. \$7.50.
- MORGAN, J. N., DAVID, M. H., COHEN, W. J. AND BRAZER, H. E. Income and welfare in the United States. Survey Research Center, Inst. for Soc. Research, Univ. of Mich., stud. New York: McGraw-Hill, 1962. Pp. x, 531. \$7.95.
- REICHARD, S., LIVSON, F. AND PETERSEN, P. G. Aging and personality—a study of eighty-seven older men. New York: Wiley for Inst. of Indus. Rel., Univ. of California, 1962. Pp. xv, 237. \$7.95.
- SHOHAN, L. B. Intercity comparisons of living costs. Tech. paper no. 10. New York: Nat. Indus. Conf. Board, 1962. Pp. 27. \$2.50; non-associates, \$12.50.
- VAIZEY, J. The economics of education. New York: Free Press of Glencoe, 1962. Pp. 165. \$4.
- YASUBA, Y. Birth rates of the white population in the United States, 1800-1860—an economic study. Johns Hopkins Univ. stud. in hist. and pol. sci., ser. 79 no. 2. Baltimore: Johns Hopkins Press, 1962. Pp. 198. Paper, \$5.
- Final report of the Committee on Consumer Protection. Great Brit. Board of Trade. London: H. M. Stat. Off., 1962. Pp. 331.

Related Disciplines

- CULLEY, J. F., ed. Contemporary values and the responsibility of the college. Conf. ser. no. 5. Iowa City: Bur. of Lab. and Management, College of Bus. Admin., State Univ. of Iowa, 1962. Pp. 61.
- FOSDICK, R. B. Adventure in giving: the story of the General Education Board—a foundation established by John D. Rockefeller. Based on an unfinished manuscript prepared by the late Henry F. Pringle and Katharine Douglas Pringle. New York: Harper & Row, 1962. Pp. x, 369. \$6.50.
- GREER, S. Governing the metropolis. New York: Wiley, 1962. Pp. xi, 153. \$4.50; paper, \$2.45.
- KEMENY, J. G., SCHLEIFER, A., JR., SNELL, J. L. AND THOMPSON, G. L. Finite mathematics with business applications. Englewood Cliffs, N.J.: Prentice-Hall, 1962. Pp. xii, 482. \$10.60.
- LENCZOWSKI, G. The Middle East in world affairs. 3rd ed. Ithaca: Cornell Univ. Press, 1962. Pp. xxvi, 723. \$8.95.
- LEOPOLD, R. W. The growth of American foreign policy—a history. New York: Knopf, 1962. Pp. xxiii, 848, xxix. \$11.75.
- MISES, L. VON. Bureaucracy. New Haven and London: Yale Univ. Press, 1962. Pp. viii, 125. Paper, \$1.45.
- First pub. 1944.

- NAGEL, E., SUPPES, P. AND TARSKI, A., ed. Logic, methodology and philosophy of science. Proceedings of the 1960 International Congress. Stanford: Stanford Univ. Press, 1962. Pp. ix, 661. \$12.50.
Part 8 is devoted to "Methodology and Philosophy of Social Sciences" and includes four essays by economists.
- PFLOMM, N. E. Financial committees. Bus. policy stud. no. 105. New York: Nat. Indus. Conf. Board, *s.d.* Pp. 66. \$2.50; \$12.50, non-associates.
- PLAINE, H. L., ed. Darwin, Marx, and Wagner—a symposium. Columbus: Ohio State Univ. Press, 1962. Pp. viii, 165. \$3.50.
- PRESTHUS, R. The organizational society—an analysis and a theory. New York: Knopf, 1962. Pp. xxvii, 323.
- RAY, P. A. South wind red—our hemispheric crisis. Chicago: Regnery, 1962. Pp. ix, 242. \$5.
- SCHEIDER, T., ed. The fate of the Germans in Hungary—a selection and translation from *Dokumentation der Vertreibung der Deutschen aus Ost-Mittel-Europa*, vol. 2. Bonn: Fed. Ministry for Expellees, Refugees, and War Victims, 1961. Pp. viii, 355.
- WALKER, R. M. AND GRANT, W. V. Statistical summary of education: 1957-58. Biennial survey of education in the United States—1956-58, chapter 1. Dept. of Health, Education, and Welfare pub. Washington: Supt. Docs., 1962. Pp. viii, 50. 35¢.
- WRIGHT, Q., EVAN, W. M. AND DEUTSCH, M., ed. Preventing World War III: some proposals. New York: Simon and Schuster, 1962. Pp. 460. \$6.95.
- U. S. government organization manual 1962-63. Revised as of June 1, 1962. Washington: Supt. Docs., 1962. Pp. v, 761. \$1.50.

PERIODICALS

General Economics; Methodology

- BOYARSKIJ, A. YA. Programme for the course "Mathematics in economic investigation and calculation." Moscow State University, 1960-61. Øst Økon., July 1962, pp. 105-15.
- DE JONG, F. J. Dimensieanalyse in de economie. De Economist, Jan.-Feb. 1962, pp. iii-v.
- PAPANDREOU, A. G. Spiegazione e previsione in economia. L'industria, Apr.-June 1962, pp. 179-91.

Price and Allocation Theory; Income and Employment Theory; Related Empirical Studies; History of Economic Thought

- AFRIAT, S. N. Preference scales and expenditure systems. Econometrica, Apr. 1962, pp. 305-23.
- AHMAD, S. The saving-wealth relation and the measure of the real value of assets. Jour. Pol. Econ., June 1962, pp. 287-93.
- AMATO, A. La teoria del moltiplicatore. Riv. di Pol. Econ., June 1962, pp. 727-57.
- APPAVADHANULU, V. Returns to scale and choice of technique. Indian Econ. Rev., Feb. 1961, pp. 262-73.
- ARROW, K. J. AND HURWICZ, L. Competitive stability under weak gross substitutability: nonlinear price adjustment and adaptive expectations. Internat. Econ. Rev., May 1962, pp. 233-55.
- BECKER, J. F. Social imbalance and the Marxian system. Kyklos, 1962, 15 (3), pp. 635-56.
- BLACK, J. Optimum savings reconsidered, or Ramsey without tears. Econ. Jour., June 1962, pp. 360-66.
- BROWN, M. AND DE CANI, J. S. Technological changes in the United States, 1950-1960. Prod. Meas. Rev., May 1962, pp. 26-39.
- BROWNLIE, A. D. An econometric analysis of investment in New Zealand. Econ. Record, June 1962, pp. 157-66.
- CÉDRAS, J. Prix administrés: faits et théories. Rev. Écon., July 1962, pp. 548-89.
- CHAMLEY, P. Sir James Steuart, inspirateur de Lord Keynes? Rev. d'Econ. Pol., May-June 1962, pp. 303-13.
- CHANDLER, C. A. The relative contribution of capital intensity and productivity to changes in output and income in the U.S. economy, farm and nonfarm sectors, 1946-58. Jour. Farm Econ., May 1962, pp. 335-48.
- DAVIDSON, P. Income and employment multipliers, and the price level. Am. Econ. Rev., Sept. 1962, pp. 738-52.
- DAVIS, O. A. AND WHINSTON, A. Externalities, welfare, and the theory of games. Jour. Pol. Econ., June 1962, pp. 241-62.
- DELL'AMORE, G. La natura economica del risparmio. Giorn. d. Econ., Mar.-Apr. 1962, pp. 172-221.
- EIZENGA, W. Van de spaarzame mens. De Economist, June 1962, pp. 415-33.
- ENKE, S. Production functions and capital depreciation. Jour. Pol. Econ., Aug. 1962, pp. 368-79.
- FARRELL, M. J. AND FIELDHOUSE, M. Estimating efficient production functions under increasing returns to scale. Jour. Royal Stat. Soc., 1962, 125 (2), pp. 252-67.
- FINN, T. J. Some properties of group demand. Internat. Econ. Rev., May 1962, pp. 189-205.

- FRANK, V. C. Möglichkeiten und Grenzen einer Erweiterung des konjunkturpolitischen Instrumentariums der Schweiz. *Wirtschaft und Recht*, 1962, 2, pp. 85-103.
- FUSCO, A. M. Vecchie e nuove formalizzazioni del duopolio. *Riv. Internaz. di Sci. Econ. e Com.*, May 1962, pp. 439-50.
- GALLAWAY, L. E. Regional capital estimates by industry, 1954-1957. *So. Econ. Jour.*, July 1962, pp. 21-25.
- GHERITY, J. A. Thomas De Quincey and Ricardian orthodoxy. *Economica*, Aug. 1962, pp. 269-74.
- GRAAFF, J. DE V. On making a recommendation in a democracy. *Econ. Jour.*, June 1962, pp. 293-98.
- GRUBER, U. Keynes' Gesamtangebotsfunktion und ihre Bedeutung für die Distributions-theorie. *Jahrb. f. Nationalök. und Stat.*, June 1962, pp. 189-219.
- HAHN, F. H. On the stability of a pure exchange equilibrium. *Internat. Econ. Rev.*, May 1962, pp. 206-13.
- HEEBINK, D. V. Isoquants and investment decisions: part I. *Engin. Econ.*, July-Aug. 1962, pp. 1-14.
- HENN, R. Lineare Methoden des Operations Research und makroökonomische Expansionsmodelle. *Zeitschr. f. Nationalök.*, 1962, 21 (3-4), pp. 297-310.
- HIRSLEIFER, J. An exposition of the equilibrium of the firm: symmetry between product and factor analyses. *Economica*, Aug. 1962, pp. 263-68.
- HOLLANDER, S. Malthus and Keynes: a note. *Econ. Jour.*, June 1962, pp. 355-59.
- JOHNSON, H. G. A simple Joan Robinson model of accumulation with one technique. *Osaka Econ. Papers*, Feb. 1962, pp. 28-33.
- KALECKI, M. Observations on the theory of growth. *Econ. Jour.*, Mar. 1962, pp. 134-53.
- V. KEMPSKI, J. Über einige Systeme von Produktionsgleichungen. *Zeitschr. f. die ges. Staatswiss.*, July 1962, pp. 412-25.
- KUMAGAI, H. Indivisibilities and resource allocation: a formulation of the problem. *Osaka Econ. Papers*, Feb. 1962, pp. 1-15.
- KUMARA SWAMY, M. R. Business fluctuations under competitive conditions. *Econ. Internaz.*, Feb. 1962, pp. 9-114.
- LAUSCHMANN, E. Zum gegenwärtigen Stand und den weiteren Entwicklungsmöglichkeiten der Welfare Economics. *Jahrb. f. Sozialwissensch.*, 1962, 13 (1), pp. 109-42.
- LEIBENSTEIN, H. Notes on welfare economics and the theory of democracy. *Econ. Jour.*, June 1962, pp. 299-319.
- LERNER, A. P. The analysis of demand. *Am. Econ. Rev.*, Sept. 1962, pp. 783-97.
- MASSELL, B. F. Investment, innovation, and growth. *Econometrica*, Apr. 1962, pp. 239-52.
- NEVILLE, J. W. The mathematical formulation of Harrod's growth model. *Econ. Jour.*, June 1962, pp. 367-70.
- NICOLA, P. Alcune formulazioni matematiche dell'economia spaziale. *Riv. Internaz. di Sci. Econ. e Com.*, July 1962, pp. 656-76.
- NICOLAÏ, A. L'inflation comme régulation. *Rev. Econ.*, July 1962, pp. 521-47.
- ORT, A. E. Preistheorie. *Jahrb. f. Sozialwissensch.*, 1962, 13 (1), pp. 1-60.
- QAYUM, A. The role of technological and inventory changes in the growth of income generation. *Zeitschr. f. die ges. Staatswiss.*, July 1962, pp. 408-11.
- REID, M. G. Consumption, savings and windfall gains. *Am. Econ. Rev.*, Sept. 1962, pp. 728-37.
- SALTER, W. E. G. Marginal labour and investment coefficients of Australian manufacturing industry. *Econ. Record*, June 1962, pp. 137-56.
- SMYTH, D. J. Investment, growth and the trade cycle: the post-war Australian experience. *Econ. Record*, June 1962, pp. 226-45.
- SPIRO, A. Wealth and the consumption function. *Jour. Pol. Econ.*, Aug. 1962, pp. 339-54.

- STIGLER, G. J. Marshall's *Principles* after Guillebaud. *Jour. Pol. Econ.*, June 1962, pp. 282-86.
- STORKOV, V. The classification of inventions: a sample study. *So. Econ. Jour.*, July 1962, pp. 15-20.
- STONE, R. AND ROWE, D. A. A post-war expenditure function. *Man. School Econ., Soc. Stud.*, May 1962, pp. 187-201.
- THORE, A. S. Dynamisk preferensteori under osäkerhet. (Dynamic theory of preference under uncertainty.) *Ekon. Tids.*, June 1962, pp. 37-73.
- UZAWA, H. On the stability of Edgeworth's barter process. *Internat. Econ. Rev.*, May 1962, pp. 218-32.
- WEISBROD, B. A. An expected-income measure of economic welfare. *Jour. Pol. Econ.*, Aug. 1962, pp. 355-67.
- WITTMANN, W. Über Faktoreigenschaften und Bedingungen beim Ertragsgesetz. *Zeitschr. f. die ges. Staatswiss.*, July 1962, pp. 385-407.

Economic History; Economic Development; National Economies

- ABRAMOVITZ, M. Economic growth in the United States. *Am. Econ. Rev.*, Sept. 1962, pp. 762-82.
- ANANTARAM, K. Indian exports in the doldrums—a problem of development disequilibrium. *Asian Econ. Rev.*, May 1962, pp. 315-38.
- ATTWOOD, E. A. Agriculture in the Irish economy. *Irish Banking Rev.*, June 1962, pp. 18-28.
- BALL, R. J. Capital imports and economic development: paradox or orthodoxy? *Kyklos*, 1962, 15 (3), pp. 610-23.
- BELAUNDE, V. A. The economic basis of politics in Latin America. Transl. by R. Lundelius. *Annals Am. Acad. Pol. Soc. Sci.*, July 1962, pp. 54-58.
- BLASS, W. P. Steel mills for developing economies. *Soc. Econ. Stud.*, June 1962, pp. 157-69.
- CAMPOLONGO, A. Le dimensioni globali del problema economico del Mezzogiorno. *Econ. Internaz.*, Feb. 1962, pp. 55-78.
- CHENERY, H. B. AND BRUNO, M. Development alternatives in an open economy: the case of Israel. *Econ. Jour.*, Mar. 1962, pp. 79-103.
- CORNBLIT, O. E., GALLO, E. (H.) AND O'CONNELL, A. A. La generación del 80 y su proyecto: antecedente y consecuencias. *Desarrollo Econ.*, Jan.-Mar. 1962, pp. 5-46.
- COSTA LEAL, A. Capital coefficients—a tool for economic planning. *Rev. de Econ. (Portugal)*, Mar. 1962, pp. 7-28.
- CREAN, J. F. Hats and the fur trade. *Can. Jour. Econ. Pol. Sci.*, August 1962, pp. 373-86.
- DELLA PORTA, G. El desarrollo economico: teorías, políticas y problemas. *De Economia*, Dec. 1961, pp. 757-857.
- DEMARIA, G. I motivi fondamentali dell'industrializzazione regionale. *Riv. Internaz. di Sci. Econ. e Com.*, June 1962, pp. 501-12.
- DEYRUP, F. J. Family dominance as a factor in population growth of developing countries. *Soc. Research*, 29 (2), 1962, pp. 177-89.
- DOSSER, D. G. M. General investment criteria for less-developed countries: a post-mortem. *Scot. Jour. Pol. Econ.*, June 1962, pp. 85-98.
- EDEL'MAN, M. The experience of preparing an intersectoral balance account of production and distribution of output in the Soviet national economy. *Prob. Econ.*, May 1962, pp. 3-20.
- ERBAN, E. Social targets of the Czechoslovak third Five-Year Plan. *Internat. Lab. Rev.*, Mar. 1962, pp. 234-47.
- FISK, E. K. Special development problems of a plural economy: the Malayan example. *Econ. Record*, June 1962, pp. 209-25.

- FLEMING, J. M. AND SERTIC, V. R. The Yugoslav economic system. *Internat. Mon. Fund Staff Papers*, July 1962, pp. 202-25.
- FRISCH, R. La pianificazione economica ed il problema della crescita nei paesi in sviluppo. *L'industria*, Apr.-June 1962, pp. 125-44.
- GOETSCHIN, P. Situation économique de l'Amérique latine. *Rev. Écon. et Soc.*, Feb. 1962, pp. 60-176.
- GROSSFIELD, K. Inventions as business. *Econ. Jour.*, Mar. 1962, pp. 12-26.
- HINRICHS, H. H. Certainty as criterion: taxation of foreign investment in Afghanistan. *Nat. Tax. Jour.*, June 1962, pp. 139-54.
- KAHAN, A. Entrepreneurship in the early development of iron manufacturing in Russia. *Econ. Develop. and Cult. Change*, July 1962, pp. 395-422.
- LEFAUCHEUX, M.-H. The contribution of women to the economic and social development of African countries. *Internat. Lab. Rev.*, July 1962, pp. 15-30.
- McFARLANE, B. Soviet investment policy. *Econ. Record*, June 1962, pp. 198-208.
- NAIDU, V. T. Capital market and industrial development in the private sector. *Asian Econ. Rev.*, May 1962, pp. 386-94.
- NEGREPONTI-DELIVANIS, M. Influencia del desarrollo económico sobre la distribución de la renta nacional. *Moneda y Crédito*, June 1962, pp. 3-30.
- NOVE, A. The industrial planning system: reforms in prospect. *Soviet Stud.*, July 1962, pp. 1-15.
- . Soviet agriculture marks time. *For. Affairs*, July 1962, pp. 576-94.
- OKADA, M. International gaps in the rate of economic growth. *Econ. Internaz.*, Feb. 1962, pp. 79-88.
- PAISH, F. W. The economic position of the United Kingdom. *Westminster Bank Rev.*, Aug. 1962, pp. 2-14.
- PARKINSON, J. R. The balance of payments and fiscal policy in Pakistan. *Scot. Jour. Pol. Econ.*, June 1962, pp. 99-109.
- PENROSE, E. Money, prices, and economic expansion in the Middle East, 1952-1960. *Riv. Internaz. di Sci. Econ. e Com.*, May 1962, pp. 401-27.
- RAJ, K. N. Growth models and Indian planning. *Indian Econ. Rev.*, Feb. 1961, pp. 242-61.
- RANIS, G. Production functions, market imperfections and economic development. *Econ. Jour.*, June 1962, pp. 344-54.
- RAO, V. K. R. V. Some reflections on the economic utopia. *Indian Econ. Rev.*, Feb. 1961, pp. 221-41.
- ROSKAMP, K. W. AND KÖHLER, H. Forum—The East German economy: Who did better in the 1950s, East or West Germany?; On East Germany's foreign economic relations. *Soc. Research*, 29 (2), 1962, pp. 221-37.
- SEERS, D. A model of comparative rates of growth in the world economy. *Econ. Jour.*, Mar. 1962, pp. 45-78.
- . Why visiting economists fail. *Jour. Pol. Econ.*, Aug. 1962, pp. 325-38.
- SHAALAN, A. S. The impact of inflation on the composition of private domestic investment. *Internat. Mon. Fund Staff Papers*, July 1962, pp. 243-63.
- STONE, R. A demonstration model for economic growth. *L'industria*, Apr.-June 1962, pp. 166-78.
- STRUMILIN, S. G. The problem of the genesis of capitalism in Russia. *Prob. Econ.*, May 1962, pp. 54-63.
- SURÁNYI-UNGER, T. Industrial capital formation in Southeast Europe. *Zeitschr. f. Nationalökon.*, 1962, 21 (3-4), pp. 311-39.
- TARN, A. AND CAMPBELL, R. W. A comparison of U.S. and Soviet industrial output. *Am. Econ. Rev.*, Sept. 1962, pp. 703-27.

- TRAPPE, P. Zur Entwicklungsfunktion des Genossenschaftswesens unter Berücksichtigung vorgegebener Sozialstrukturen. *Zeitschr. f. die ges. Staatswiss.*, July 1962, pp. 442-61.
- WEINER, M. The struggle for equality in India. *For. Affairs*, July 1962, pp. 644-52.
- WINCH, K. National policy and economic decisions in Israel. *Soc. Econ. Stud.*, June 1962, pp. 170-92.
- WITTMAN, W. Wachstum, Konjunktur und Preisniveau der schweizerischen Volkswirtschaft. *Zeitschr. f. die ges. Staatswiss.*, July 1962, pp. 426-41.
- YOUNG-CHI, T. Land-use improvement: a key to the economic development of Taiwan. *Jour. Farm. Econ.*, May 1962, pp. 363-72.

Statistical Methods; Econometrics; Social Accounting

- BOOKER, H. S. Change of manufacturing output. *Am. Stat. Assoc., Proc. Soc. Stat. Sec.*, 1961, pp. 42-48.
- DHRYMES, P. J. On devising unbiased estimators for the parameters of the Cobb-Douglas production function. *Econometrica*, Apr. 1962, pp. 297-304.
- HOOPER, J. W. Partial trace correlations. *Econometrica*, Apr. 1962, pp. 324-31.
- RAMPERSAD, F. B. An integrated system of real and financial accounts. *Soc. Econ. Stud.*, June 1962, pp. 128-56.
- ROY, A. D. Pistimetric probability and economic decisions. *Man. School Econ. Soc. Stud.*, May 1962, pp. 87-103.
- SERCK-HANSEN, J. Input-output tables in the U.S.S.R. and Eastern Europe. *Øst Økon.*, July 1962, pp. 65-72.
- The development of Soviet statistics—report from a conference in Moscow with contributions by S. Strumilin, A. Ezhov, I. Evenko, P. Maslov and N. Druzhinin. *Øst Økon.*, July 1962, pp. 120-35.

Economic Systems; Planning and Reform; Cooperation

- ZAUBERMAN, A. The Soviet and Polish quest for a criterion of investment efficiency. *Economica*, Aug. 1962, pp. 234-54.
- ZIELINSKI, J. G. An attempt to construct a realistic theory of socialist economy—synopsis for discussion. *Øst Økon.*, July 1962, pp. 87-104.

Business Fluctuations

- ALBERTS, W. W. Business cycles, residential construction cycles, and the mortgage market. *Jour. Pol. Econ.*, June 1962, pp. 263-81.
- HABAKKUK, H. J. Fluctuations in house-building in Britain and the United States in the nineteenth century. *Jour. Econ. Hist.*, June 1962, pp. 198-230.
- LOVELL, M. C. Buffer stocks, sales expectations, and stability: a multi-sector analysis of the inventory cycle. *Econometrica*, Apr. 1962, pp. 267-96.
- MANCA, G. Sulla utilizzazione delle statistiche delle scorte per previsioni congiunturali. *Riv. di Pol. Econ.*, July 1962, pp. 937-58.

Money, Credit and Banking; Monetary Policy; Mortgage Credit

- HARRIS, C. P. Private savings banks in Australia, 1956-1960. *Econ. Record*, June 1962, pp. 183-97.
- KÖHLER, C. Bestimmungsgründe der Schwankungen des langfristigen Zinses. *Schmollers Jahrbuch* 82 (2), pp. 43-58.
- v. LOESCH, A. Das Revolving-Kreditsystem. *Zeitschr. f. die ges. Staatswiss.*, July 1962, pp. 462-82.

- MACESICH, G. Demand for currency and taxation in Canada. *So. Econ. Jour.*, July 1962, pp. 33-38.
- MAURI, A. Alcune considerazioni sull'ordinamento delle riserve obbligatorie di liquidità negli Stati Uniti. *Il Risparmio*, May 1962, pp. 797-816.
- ROJO, L. A. La revisión del modelo neoclásico en Patinkin. *Rev. Econ. Pol.*, May-Aug. 1962, pp. 5-35.
- THEYGESEN, N. Amerikanske økonomers analyse of U.S.A.'s pengepolitik. *Nationaløk. Tids.*, 1962, 100 (1-2), pp. 30-52.
- VILARASAU, J. La oferta de dinero. Moneda y Crédito, June 1962, pp. 31-66.
- YOHE, W. P. The derivation of certain financial multipliers. *So. Econ. Jour.*, July 1962, pp. 26-32.

Public Finance; Fiscal Policy

- CHOWDHURY, A. H. M. N. The predictability and the flexibility of tax revenues in Pakistan. *Pakistan Develop. Rev.*, Summer 1962, pp. 189-214.
- D'ADDARIO, R. Sulla costruzione della scala delle aliquote di una imposta progressiva. *Giorn. d. Econ.*, Mar.-Apr. 1962, pp. 155-71.
- FORTE, F. La teoria dell'economia finanziaria nel pensiero di Luigi Einaudi. *Giorn. d. Econ.*, Jan.-Feb. 1962, pp. 1-34.
- GALLAWAY, L. E. An economic analysis of public policy for the depressed areas. *Indus. Lab. Rel. Rev.*, July 1962, pp. 500-9.
- HARBERGER, A. C. The incidence of the corporation income tax. *Jour. Pol. Econ.*, June 1962, pp. 215-40.
- HASKELL, M. A. Federal grants and budgetary distortion. *Quart. Rev. Econ. & Bus.*, May 1962, pp. 79-87.
- HICKS, U. K. The integration of the budget and the development plan with special reference to the Spanish situation. *Pub. Fin./Fin. Publiques*, 1962, 17 (2), pp. 120-53.
- LAUFENBURGER, H. Finances publiques suisses comme reflets de la structure et de la conjoncture. *Riv. di Pol. Econ.*, July 1962, pp. 914-36.
- REIG, E. J. Considérations sur l'imposition des gains de capital. *Rev. Sci. Fin.*, Apr. 1962, pp. 232-57.
- SAVILLE, L. Regional contrasts in the development of local public finance. *Nat. Tax Jour.*, June 1962, pp. 155-69.
- SENF, P. Le budget, expression de la volonté politique en Allemagne. *Pub. Fin./Fin. Publiques*, 1962, 17 (2), pp. 156-83.
- SLESINGER, R. E. Fiscal policy considerations for underdeveloped economies. *Kyklos*, 1962, 15 (3), pp. 624-34.

International Economics

- BALL, R. J. AND DRAKE, P. Export growth and the balance of payments. *Man. School Econ. Soc. Stud.*, May 1962, pp. 105-19.
- BERTOLDI, F. Il comportamento turistico nella teoria del commercio internazionale. *Mondo Aperto*, Apr.-June 1962, pp. 101-31.
- BRUTON, H. J. AND BOSE, S. R. The export bonus scheme: a preliminary report. *Pakistan Develop. Rev.*, Summer 1962, pp. 229-68.
- CANTARELLI, D. Salari e oltresalari di alcuni settori industriali nei paesi della Comunità Economica Europea. *Giorn. d. Econ.*, Jan.-Feb. 1962, pp. 61-95.
- DEJONGHE, R. Anti-dumpingspolitiek en maatregelen tegen marktverstoring. *Tijdschrift v. Econ.*, 1962, 7 (2), pp. 172-212.
- DEUTSCH, K. W., BLISS, C. I. AND ECKSTEIN, A. Population, sovereignty, and the share of foreign trade. *Econ. Develop. and Cult. Change*, July 1962, pp. 353-66.

- ENKE, S. Welfare and trade. *Kyklos*, 1962, 15 (3), pp. 537-59.
- ERBE, R. Die internationale Währungsordnung. *Kyklos*, 1962, 15 (3), pp. 594-609.
- HAUGE, G. The United States faces economic unity in Europe. *Annals Am. Acad. Pol. Soc. Sci.*, July 1962, pp. 130-37.
- HOMBURGER, E. AND JENNY, H. Vertragliche Ein- und Ausfuhrverbote im EWG-Kartellrecht. *Wirtschaft und Recht*, 1962, 2, pp. 121-35.
- HØST-MADSEN, P. Asymmetries between balance of payments surpluses and deficits. *Internat. Mon. Fund Staff Papers*, July 1962, pp. 182-201.
- KELLER, H. P. Die agrarpolitischen Beschlüsse der EWG. *Wirtschaft und Recht*, 1962, 2, pp. 114-20.
- KINDLEBERGER, C. P. Foreign trade and growth: lessons from British experience since 1913. *Lloyds Bank Rev.*, July 1962, pp. 16-28.
- KRAUSE, L. B. United States imports, 1947-1958. *Econometrica*, Apr. 1962, pp. 221-38.
- MATTICK, P. Capital formation and foreign trade. *Sci. and Soc.*, Summer 1962, pp. 293-307.
- MICHAELY, M. Multilateral balancing in international trade. *Am. Econ. Rev.*, Sept. 1962, pp. 685-702.
- MORGAN, D. J. Imperial preference in the West Indies and in the British Caribbean, 1929-55: a quantitative analysis. *Econ. Jour.*, Mar. 1962, pp. 104-33.
- PARASASSI, M. Il problema dell'oro. *Il Risparmio*, May 1962, pp. 817-30.
- POLAK, J. J. International coordination of economic policy. *Internat. Mon. Fund Staff Papers*, July 1962, pp. 149-81.
- PRYOR, F. L. Foreign trade theory in the Communist Bloc. *Soviet Stud.*, July 1962, pp. 41-61.
- RIEMER, S. The devaluation of the Israel pound. *Kyklos*, 1962, 15 (3), pp. 657-70.
- RUOZI, R. Problemi monetari attuali: la liquidità internazionale. *Il Risparmio*, May 1962, pp. 831-90.
- SCHMIDT, S. C. The impact of Western European integration on U. S. exports: part II. *Illinois Agric. Econ.*, July 1962, pp. 1-15.
- STERN, R. M. AND ZUPNICK, E. The theory and measurement of elasticity of substitution in international trade. *Kyklos*, 1962, 15 (3), pp. 580-93.
- WATANABE, T. The principle of the rate of growth of demand versus the doctrine of comparative costs. *Osaka Econ. Papers*, Feb. 1962, pp. 16-27.

Business Finance; Investment and Security Markets; Insurance

- BHATIA, R. J. Profits and the rate of change in money earnings in the United States, 1935-1959. *Economica*, Aug. 1962, pp. 255-62.
- CHEWNING, R. C. Relationship between volume of bond issues and interest yields, 1900-1959. *Bus. Rev.* (Univ. Washington), Apr.-June 1962, pp. 48-56.
- CURRIE, A. W. The First Dominion Companies Act. *Can. Jour. Econ. Pol. Sci.*, August 1962, pp. 387-404.

Business Organization; Managerial Economics; Marketing; Accounting

- BAUER, R. A., AND FIELD, M. G. Ironie contrast: US and USSR drug industries. *Harvard Bus. Rev.*, Sept.-Oct. 1962, pp. 89-99.
- BUZZELL, R. D. AND SLATER, C. C. Decision theory and marketing management. *Jour. Marketing*, July 1962, pp. 7-16.
- CHARNES, A. AND COOPER, W. W. Management science and managing. *Quart. Rev. Econ. & Bus.*, May 1962, pp. 7-19.

- EARLEY, J. S. AND CARLETON, W. T. Budgeting and the theory of the firm: new findings. *Jour. Indus. Econ.*, July 1962, pp. 165-73.
- LASSÈGUE, P. Esquisse d'une épistomologie de la comptabilité. *Rev. d'Econ. Pol.*, May-June 1962, pp. 314-26.
- MAUSS, P. Peut-on calculer rationnellement le taux d'amortissement? *Rev. d'Econ. Pol.*, May-June 1962, pp. 327-52.
- MCLELLAND, W. G. Economics of the supermarket. *Econ. Jour.*, Mar. 1962, pp. 154-70.
- MCGUIRE, J. W., CHIU, J. S. Y. AND ELBING, A. O. Executive incomes, sales and profits. *Am. Econ. Rev.*, Sept. 1962, pp. 753-61.
- PATTON, A. AND STAFF OF MCKINSEY & Co. Executive compensation here and abroad. *Harvard Bus. Rev.*, Sept.-Oct. 1962, pp. 144-54.
- PRÉVOST, R. Point mort et coût marginal. *Rev. d'Econ. Pol.*, May-June 1962, pp. 353-89.
- SORTER, G. H. AND HORNGREN, C. T. Asset recognition and economic attributes—the relevant costing approach. *Accounting Rev.*, July 1962, pp. 391-99.
- STRAUSS, E. The structure of English milk distribution. *Jour. Royal Stat. Soc.*, 1962, 125 (2), pp. 232-42.
- TALLMAN, G. B. AND BLOMSTROM, B. Retail innovations challenge manufacturers. *Harvard Bus. Rev.*, Sept.-Oct. 1962, pp. 130-43.
- VAN ROMPUY, V. Recente evolutie van de theorie van de bedrijfsleiding in de V.S.A. *Tijdschrift v. Econ.*, 1962, 7 (2), pp. 156-71.
- WIENER, J. The cost structure of the industrial enterprise: pattern of analysis. *Accounting Rev.*, July 1962, pp. 438-51.

Industrial Organization; Government and Business; Industry Studies

- BAIN, A. D. The growth of television ownership in the United Kingdom. *Internat. Econ. Rev.*, May 1962, pp. 145-67.
- BALDWIN, W. L. Contracted research and the case for big business. *Jour. Pol. Econ.*, June 1962, pp. 294-98.
- BEACHAM, A. Some thoughts on the cement judgment. *Econ. Jour.*, June 1962, pp. 335-43.
- BÖCKLI, H. R. Der Gesetzgeber vor dem Konzentrationsproblem. *Wirtschaft und Recht*, 1962, 2, pp. 136-64.
- FARMER, R. N. Inland freight transportation pricing in Eastern Saudi Arabia. *Jour. Indus. Econ.*, July 1962, pp. 174-87.
- FOGEL, R. W. A quantitative approach to the study of railroads in American economic growth: a report of some preliminary findings. *Jour. Econ. Hist.*, June 1962, pp. 163-97.
- HART, P. E. The estimation of time series of profits in British industries, 1920-38. *Bull. Oxford Univ. Inst. Stat.*, May 1962, pp. 257-67.
- HINES, L. G. The hazards of benefit-cost analysis as a guide to public investment policy. *Pub. Fin./Fin. Publiques*, 1962, 17 (2), pp. 101-17.
- HUNTER, W. D. G. The development of the Canadian uranium industry: an experiment in public enterprise. *Can. Jour. Econ. Pol. Sci.*, August 1962, pp. 329-52.
- NAG, S. P. Under-utilization of installed capacity in the cotton textile industry in India 1948-1958. Part I. *Indian Econ. Rev.*, Feb. 1961, pp. 274-84.
- OSBORN, R. C. Governmental policy and the control of corporate profits. *Quart. Rev. Econ. & Bus.*, May 1962, pp. 63-77.
- STEFANI, G. La scelta dei prezzi delle imprese pubbliche in relazione al costo di produzione. *Giorn. d. Econ.*, Jan.-Feb. 1962, pp. 96-147.
- ZELINSKY, W. Has American industry been decentralizing? The evidence for the 1939-1954 period. *Econ. Geog.*, July 1962, pp. 251-69.

Land Economics; Agricultural Economics; Economic Geography; Housing

- BADOUIN, R. La contribution de l'agriculture à la mise en oeuvre du développement économique. *Cahiers Inst. Sci. Econ. Appliquée*, Feb. 1962, pp. 5-32.
- BERINGER, C. Welfare and production efficiency; two objectives of land reform in Pakistan. *Pakistan Develop. Rev.*, Summer 1962, pp. 173-88.
- BREIMYER, H. F. The three economies of agriculture. *Jour. Farm Econ.*, Aug. 1962, pp. 679-99.
- DEAN, G. W. AND CARTER, H. O. Some effects of income taxes on large-scale agriculture. *Jour. Farm Econ.*, Aug. 1962, pp. 754-68.
- DORING, H., MIETH, R. AND JUDEFEIND, F. Importance and tasks of inter-cooperative establishments, enterprises and organizations. *Wissensch. Zeitschr. der Hochschule f. landwirtsch. Produktionsgenossensch.*, 1962, 5 (1), pp. 1-32.
- DOVRING, F. AND LARSEN, H. K. The Danish farm system. *Illinois Agric. Econ.*, July 1962, pp. 23-31.
- DUNN, E. S., Jr. The need for a research design in Southern regional economic studies. *So. Econ. Jour.*, July 1962, pp. 10-14.
- FISHER, G. Further calculations on regional differences in profitability and growth. *Scot. Jour. Pol. Econ.*, June 1962, pp. 147-58.
- GASSER, C. Die Bodenteuerung vom Standpunkt der Industrie. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, June 1962, pp. 121-43.
- GORDON, R. L. Coal price regulation in the European community, 1946-1961. *Jour. Indus. Econ.*, July 1962, pp. 188-203.
- JUDGE, G. G. AND SWANSON, E. R. Adjustments in size of beef and hog enterprises: a Markov process analysis. *Illinois Agric. Econ.*, July 1962, pp. 32-43.
- KÖTTER, H. Economic and social implications of rural industrialisation. *Internat. Lab. Rev.*, July 1962, pp. 1-14.
- LADD, W. M. The effect of integration on property values. *Am. Econ. Rev.*, Sept. 1962, pp. 801-8.
- MAKI, W. R. Decomposition of the beef and pork cycles. *Jour. Farm Econ.*, Aug. 1962, pp. 731-43.
- MELLOR, J. W. The process of agricultural development in low-income countries. *Jour. Farm Econ.*, Aug. 1962, pp. 700-16.
- MILHAU, J. La paupérisation de l'agriculture en France et dans le monde. *Cahiers Inst. Sci. Econ. Appliquée*, Feb. 1962, pp. 49-84.
- MOGLEWER, S. A game theory model for agricultural crop selection. *Econometrica*, Apr. 1962, pp. 253-66.
- MORRILL, R. L. Regional growth and net migration, State of Washington, 1950-1960. *Bus. Rev. (Univ. Washington)*, Apr.-June 1962, pp. 5-13.
- NEUKOMM, W. Die Bodenteuerung vom Standpunkt der Landwirtschaft. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, June 1962, pp. 144-56.
- PARISE, R. M. The costs of protecting the dairying industry. *Econ. Record*, June 1962, pp. 167-82.
- PRYBYLA, J. S. Problems of Soviet agriculture. *Jour. Farm Econ.*, Aug., 1962, pp. 820-36.
- SMITH, E. D. The deliberateness of economic choices. *So. Econ. Jour.*, July 1962, pp. 39-43.
- TIEMSTRA, N. Enkele kanttekeningen bij het garantieprijbeleid ten behoeve van de Nederlandse melkveehouderij. *De Economist*, June 1962, pp. 434-67.
- TIMBERLAKE-WEBER, H. Anpassungsprobleme der Landwirtschaft im Wachstumsprozess der amerikanischen Wirtschaft. *Jahrb. f. Nationalök. und Stat.*, June 1962, pp. 220-45.
- TOMEK, W. G. AND COCHRANE, W. W. Long-run demand: a concept, and elasticity estimates for meats. *Jour. Farm Econ.* Aug. 1962, pp. 717-30.

- Yaux, F. La plus-value foncière du point de vue de l'habitat. *Schweiz. Zeitschr. f. Volkswirtschaft und Stat.*, June 1962, pp. 157-73.
- Zusman, P. Dynamic discrepancies in agricultural economic systems. *Jour. Farm Econ.*, Aug. 1962, pp. 744-53.
- Action by governments to stabilise primary commodity prices. *Internat. Lab. Rev.*, Mar. 1962, pp. 207-33.
- The balance sheet of agriculture, 1962. *Fed. Res. Bull.*, Aug. 1962, pp. 965-74.
- Den tekniske utvikling i sovjetiske fiskerier—oversettelse av et foredrag av A. A. Ishkov, II. del. (Technical development in Soviet fisheries—from a report by A. A. Ishkov, part 2—with a short summary in English). *Øst Økon.*, July 1962, pp. 136-51.

Labor Economics

- BALL, R. J. The prediction of wage-rate changes in the United Kingdom economy, 1957-60. *Econ. Jour.*, Mar. 1962, pp. 27-44.
- BLOCH, H. D. New York Negroes and organized labor. *Riv. Internaz. di Sci. Econ. e Com.*, July 1962, pp. 631-55.
- BOGAERDE, F. VAN DEN. The development and nature of collective agreements in the South African metal industry. *Fin. & Trade Rev.*, Mar. 1962, pp. 13-37.
- CARTER, C. F. The economic use of brains. *Econ. Jour.*, Mar. 1962, pp. 1-11.
- COCKBURN, M. AND WHITEHEAD, D. Wages in Australia: practices and prescriptions. *Bull. Oxford Univ. Inst. Stat.*, May 1962, pp. 235-56.
- COLLVER, A. AND LANGLOIS, E. The female labor force in metropolitan areas: an international comparison. *Econ. Develop. and Cult. Change*, July 1962, pp. 367-85.
- CONWAY, F. School teachers' salaries, 1945-1959. *Man. School Econ. Soc. Study.*, May 1962, pp. 153-79.
- DOUTY, H. M. Some problems of wage policy. *Mo. Lab. Rev.*, July 1962, pp. 733-41.
- FAKIOLOS, R. Problems of labour mobility in the USSR. *Soviet Stud.*, July 1962, pp. 16-40.
- HILL, T. P. Wages and labour turnover. *Bull. Oxford Univ. Inst. Stat.*, May 1962, pp. 185-233.
- HORWOOD, O. P. F. Is minimum wage legislation the answer for South Africa? *So. Afr. Jour. Econ.*, June 1962, pp. 119-31.
- JAMIESON, S. Regional factors in industrial conflict: the case of British Columbia. *Can. Jour. Econ. Pol. Sci.*, August 1962, pp. 405-16.
- JASPAN, M. A. Indonesian workers' attitudes in nationalized industry. *Sci. and Soc.*, Summer 1962, pp. 257-75.
- KALISH, C., KELLOGG, F. AND KESSLER, M. Special labor force report: labor force and employment in 1961. *Mo. Lab. Rev.*, June 1962, pp. 621-34.
- KANNINEN, T. P. Wage differences among labor markets. *Mo. Lab. Rev.*, June 1962, pp. 614-20.
- KNOWLES, K. G. J. C. AND ROBINSON, D. Wage rounds and wage policy. *Bull. Oxford Univ. Inst. Stat.*, May 1962, pp. 269-329.
- KREPS, J. M. Aggregate income and labor force participation of the aged. *Law and Contemp. Prob.* 27 (1), pp. 52-66.
- LEMOINE, P. Resultaten en perspectieven van een regionaal welvaartsonderzoek in België. *Tijdschrift v. Econ.*, 1962, 7 (2), pp. 131-55.
- MANGUM, G. L. Grievance procedures for railroad operating employees. *Indus. Lab. Rel. Rev.*, July 1962, pp. 474-99.
- MOSES, L. N. Income, leisure, and wage pressure. *Econ. Jour.*, June 1962, pp. 320-34.
- MYERS, R. J. and CHANDLER, J. H. International comparisons of unemployment. *Mo. Lab. Rev.*, Aug. 1962, pp. 857-64.

- PETERSON, J. M. Research needs in minimum wage theory. *So. Econ. Jour.*, July 1962, pp. 1-9.
- PIATAKOV, A. Labour administration by the state and trade unions in the U.S.S.R. *Internat. Lab. Rev.*, June 1962, pp. 558-72.
- ROGIN, M. Voluntarism: the political functions of an anti-political doctrine. *Indus. Lab. Rel. Rev.*, July 1962, pp. 521-35.
- ROSENFELD, C. Special labor force report: the employment of students, October 1961. *Mo. Lab. Rev.*, June 1962, pp. 635-42.
- SCHUH, G. E. An econometric investigation of the market for hired labor in agriculture. *Jour. Farm Econ.*, May 1962, pp. 307-21.
- SOLOVYOV, L. The reduction of employees' working hours in the Soviet Union. *Internat. Lab. Rev.*, July 1962, pp. 31-41.
- TAIRA, K. The inter-sectoral wage differential in Japan, 1881-1959. *Jour. Farm Econ.*, May 1962, pp. 322-34.
- YAMASAKI, T. The forestry labour of Japan. *Kyoto Univ. Econ. Rev.*, Oct. 1961, pp. 17-41.
- Manpower planning in Eastern Europe. *Internat. Lab. Rev.*, Aug. 1962, pp. 95-127.
- Results of the I.L.O. 1961 October inquiry. Pts. 1, 2 and 3. *Stat. suppl. of Internat. Lab. Rev.*, July 1962, pp. 3-71.

Population; Welfare Programs; Consumer Economics

- BLACKBURN, J. O. Economic aspects of pension plans. *Law and Contemp. Prob.* 27 (1), pp. 89-101.
- CÉPÈDE, M. Démographie et développement. *Cahiers Inst. Sci. Econ. Appliquée*, Feb. 1962, pp. 33-48.
- MORGAN, J., DAVID, M. and BRAZER, H. Factors affecting family income: results of a conditional probability analysis. *Am. Stat. Assoc., Proc. Soc. Stat. Sec.*, 1961, pp. 192-200.
- STRASSMANN, W. P. Optimum consumption patterns in high-income nations. *Can. Jour. Econ. Pol. Sci.*, August 1962, pp. 364-72.
- TAEUBER, C., BRUNSMAN, H. G. AND SHRYOCK, H. S., Jr. Trends as revealed by the 1960 population census of the United States. *Am. Stat. Assoc., Proc. Soc. Stat. Sec.*, 1961, pp. 100-26.
- VOGT, J. Population increase in the Soviet Union—an attempt at prognosis. *Øst Økon.*, July 1962, pp. 73-86.

NOTES

EDITORIAL NOTE

Like my predecessor, Paul T. Homan, I have occupied the chair of managing editor of the *Review* for eleven years. Engrossing though the work has been and much as I shall miss it, I am certain that it is wise for the responsibility for selecting the contents of the major publication of the major economics association to be passed on fairly regularly to a younger member of the profession who will view current research afresh.

The Association is fortunate that John G. Gurley is willing to assume these responsibilities. Given his previous experience on the editorial board of the *Journal of Finance* and his recent three-months period as acting managing editor during my absence, I know that the transition will be a smooth one. His good judgment, his catholic interests in economics, his keen analytical mind, and his fine critical sense will serve the *Review* and the profession well.

He will find, as I have, that the work can only be done at all satisfactorily if he has the conscientious help of many members of the profession. A genuine concern for the advancement of economics and a strong sense of responsibility to the Association have made some of the most brilliant younger economists willing to serve on the editorial board during my eleven years—and I would have been badly off indeed without their advice and good judgment. Literally hundreds of other economists have read manuscripts for me and appraised them critically—frequently contributing substantially (but anonymously) to the research results of many, particularly younger, authors. Hundreds of economists have been willing to set aside other, more interesting work to perform the very important task of book-reviewing. To all of these people, the economics profession is heavily indebted—and so, in particular, am I. I wish it were possible for me to thank every one of them individually.

The exercise of judgment in the final selection of materials to be accorded publication is the most difficult—and sleep-disturbing—responsibility of the managing editor. No matter how much good advice may be at his disposal, he finally has to decide which of many good articles should be accepted. When space limitations permit only the acceptance of 12 to 16 per cent of the manuscripts submitted, many authors have to be disappointed. Fortunately the really important contribution nearly always is published, even though the first journal to which it is submitted may not be able to use it. And the competition for publication undoubtedly has a good effect on the quality of research in our field. Nevertheless, rejection hurts; and I want to express my appreciation to the many hundreds of authors whose papers I have been unable to accept for the almost unfailing good nature and understanding they have shown in their acceptance of my decisions—even though they did not always think them wise ones.

Finally, I must add my appreciation for the constant helpfulness, complete devotion to the task, and intelligent good judgment of my editorial assistant, Miss Doris Merriam, who after sixteen years with two managing editors of the *Review* has been unable to contemplate the prospect of breaking in still a third managing editor. I know that the many members of the Association who have known her, at least through correspondence, will join me and other officers of the Association in wishing her well in her new career with the Peace Corps in Latin America.

To John Gurley go my best wishes for a highly successful term as the fourth managing editor of the *American Economic Review*.

BERNARD F. HALEY

FELLOWSHIP AND GRANTS

The Ford Foundation is offering a limited number of fellowships in business administration, in economics, and in the social sciences for research on business, for the 1963-64

academic year. Detailed announcements about individual fellowship categories as well as nomination forms have been furnished to all institutions participating in this program. Further information may be obtained from the Ford Foundation, 477 Madison Avenue, New York 22, N.Y.

The National Science Foundation announces that the next closing date for receipt of basic research proposals in the life sciences is January 15, 1963. Proposals received prior to that date will be reviewed at the spring meetings of the Foundation's advisory panels and disposition will be made approximately four months following the closing date. Proposals received after the January 15, 1963 closing date will be reviewed following the summer closing date of May 15, 1963. Inquiries should be addressed to the Biological and Medical Sciences Division, National Science Foundation, Washington 25, D.C.

The Ford Foundation announces the sixth annual Regional Research Seminars in Economics to be held in the summer of 1963 for an eight-week period. Participation is open on a competitive basis to faculty members teaching economics or business subjects at four-year institutions of higher learning that do not offer a doctorate in economics. It is the purpose of the program to enhance the effectiveness of teaching and to encourage research studies of significance.

Fellowships provide a stipend of \$800, an additional contribution of \$200 toward living expenses, and travel expenses. Preference will be given to applicants under fifty years of age who have had at least three years of teaching experience since attending graduate school. A brochure containing the names of the seminar directors, the subject areas, and the definitions of regions will be sent to AEA members in the United States about December 1, 1962. Applications can be secured from the seminar director in the applicant's region, and must be submitted before February 1, 1963. Awards will be announced not later than March 15, 1963.

The Ford Foundation also announces the sponsorship of a summer workshop on policy problems connected with economic growth in advanced western nations, to be held June 11-28, 1963 at Carnegie Institute of Technology under the direction of G. L. Bach of the Carnegie Institute of Technology and E. F. Denison of The Brookings Institution.

The general purpose is to help young economists to undertake serious research on problems of economic growth in the United States. Participation is open on a competitive basis to economists who have demonstrated interest and competence in economic research. Preference will be given to those under forty-five years of age. Funds will be provided to cover expenses plus a modest honorarium for participants. Applications and further information may be obtained by writing to Professor Bach or Dr. Denison.

Announcements

The City University of New York (Brooklyn College, City College, Hunter College, and Queens College) has inaugurated a new doctoral program in economics. Jerome B. Cohen has been named executive officer. Visiting professors for the academic year 1962-63 are William Baumol of Princeton University and Lawrence Klein of the University of Pennsylvania.

Friends of the late Selma Fine Goldsmith are establishing a memorial fund in her name. The fund will be used to make an annual award to the outstanding graduate woman student of economics at Cornell University. Checks may be made out to the Selma Fine Goldsmith Memorial Fund and mailed to Mr. Walter G. Bruska, Director of Development, Cornell University, Ithaca, New York.

Deaths

John B. Canning, professor of economics and associate, Food Research Institute, emeritus, Stanford University, July 4, 1962.

Wilson Gee, February 1, 1961.

Reid L. McClung, former dean of the School of Commerce, University of Southern California, August 18, 1961.

Blake E. Nicholson, associate professor of business law, Wharton School, University of Pennsylvania, August 19, 1962.

John T. O'Brien, Chestnut Hill, Massachusetts, March 14, 1962.

Milton J. Schlagenhauf, Medford, Massachusetts.

Karl Scholz, professor emeritus, economics department, Wharton School, University of Pennsylvania, May 9, 1962.

L. Edwin Smart, professor of economics, Ohio State University, June 27, 1962.

C. Woody Thompson, professor and director, Bureau of Business and Economic Research, State University of Iowa, August 30, 1962.

Retirements

Alma Herbst, Ohio State University.

L. T. Morgan, University of Toronto.

Lawrence J. Nachtrab, associate professor emeritus, College of Business Administration, University of Georgia, June 1962.

Visiting Foreign Scholars

Dean B. Cameron, Australian National University: visiting professor, economics department, Wharton School, University of Pennsylvania, spring term, 1963.

J. H. Dales, University of Toronto: visiting professor, University of Chicago, 1962-63.

Miles Fleming, University of Bristol, England: visiting lecturer, economics department, Wharton School, University of Pennsylvania, 1962-63.

Herbert H. Giersch, University of Saarland: visiting professor of economics, Yale University.

John Kmenta, Sydney University, Australia: acting assistant professor of economics, Stanford University, winter and spring quarters, 1962-63.

Nissan Liviatan, Hebrew University, Israel: visiting lecturer, economics department, Wharton School, University of Pennsylvania, 1962-63.

Friedrich A. Lutz, Universität Zurich, Switzerland: visiting research professor of economics, Yale University, fall 1962.

Frank C. Spooner, University of Paris: visiting research professor of economics, Yale University.

Norman Sun, International Christian University, Mitaka, Japan: visiting professor of economics, Swarthmore College, 1962-63.

Trevor W. Swan, Australian National University: visiting research professor of economics, Yale University.

H. R. C. Wright: visiting associate professor of economics, McGill University.

Promotions

Nicholas Balabkins: associate professor of economics, Lehigh University.

Bela Balassa: associate professor of economics, Yale University.

Robert A. Battis: associate professor of economics, Trinity College.

Diran Bodenhorn: professor of economics, Ohio State University.

John G. Boyd: associate professor of economics, State University of New York.

William C. Brainard: lecturer in economics, Yale University.

Irving Brecher: professor of economics, McGill University.

Robert C. Brooks: associate professor of business administration, Vanderbilt University.

Henry W. Broude: associate professor of economics, Yale University.

Edward L. Claiborn: assistant professor of economics, United States Air Force Academy.

Clifford D. Clark: professor of economics, Graduate School of Business Administration, New York University.

John D. Colbrunn: assistant professor of economics, United States Air Force Academy.

Edwin B. Cox: associate professor of statistics, Boston University.

Ward S. Curran: assistant professor of economics, Trinity College.

Carlos F. Diaz-Alejandro: assistant professor of economics, Yale University.

I. M. Drummond: assistant professor, department of political economy, University of Toronto.

Franz Gehrels: professor of economics, Indiana University.

H. A. J. Green: associate professor, department of political economy, University of Toronto.

John Hansel, Jr.: associate professor of economics, United States Air Force Academy.

D. G. Hartle: associate professor, department of political economy, University of Toronto.

Gerald K. Helleiner: assistant professor of economics, Yale University.

John W. Hooper: associate professor of economics, Yale University.

William Iulo: associate economist, Bureau of Economics and Business Research, College of Economics and Business, Washington State University.

Douglas N. Jones: associate professor of economics, United States Air Force Academy.

Robert A. Kavesh: professor of economics and finance, Graduate School of Business Administration, New York University.

Reuben A. Kessel: associate professor of business economics, Graduate School of Business, University of Chicago.

Wade R. Kilbride: assistant professor of economics, United States Air Force Academy.

Robert E. L. Knight: associate professor of economics, University of Maryland.

A. Kruger: assistant professor, department of political economy, University of Toronto.

Sherman Krupp: associate professor of economics, Lehigh University.

K. Levitt: lecturer in economics, McGill University.

H. I. MacDonald: assistant professor, department of political economy, University of Toronto.

H. Michael Mann: assistant professor, economics department, Boston College.

Donald C. Mead: assistant professor of economics, Yale University.

Howard E. Mitchell: associate professor of economics, Western Washington State College.

E. P. Neufeld: associate professor, department of political economy, University of Toronto.

Jan Prybyla: associate professor, department of economics, Pennsylvania State University.

Henry Rosovsky: professor of economics, University of California, Berkeley.

Marvin Rozen: associate professor, department of economics, Pennsylvania State University.

Charles L. Schultze: professor of economics, University of Maryland.

Eli Schwartz: professor of finance, Lehigh University.

Jati K. Sengupta: assistant professor, department of economics, Iowa State University.

G. R. Simonson: associate professor, department of economics, Long Beach State College.

Donald R. Snodgrass: assistant professor of economics, Yale University.

Milton H. Spencer: professor of business administration, Wayne State University.

Thaddeus H. Spratlen: assistant professor of economics, Western Washington State College.

Robert W. Thomas, Jr.: assistant professor, department of economics, Iowa State University.

Jan V. Tumlr: assistant professor of economics, Yale University.

Richard A. Tybout: professor of economics, Ohio State University.

M. H. Watkins: assistant professor, department of political economy, University of Toronto.

Harold W. Watts: associate professor of economics, Yale University.

J. C. Weldon: professor of economics, McGill University.

Elmus R. Wicker: associate professor of economics, Indiana University.

W. Donald Wood: professor of economics and industrial relations, Queen's University, Ontario.

James S. Worley: associate professor of economics and business administration, Vanderbilt University.

Administrative Appointments

Robert F. Barlow: dean, Whittemore School of Business and Economics, University of New Hampshire.

August C. Bolino: branch chief, Wage and Hour Division, U.S. Department of Labor.

John Cosgrove, Georgetown University: assistant director, U.S. Office of Emergency Planning.

Howard Cutler, Pennsylvania State University: vice president for academic affairs, University of Alaska.

William J. Fellner: chairman, department of economics, Yale University.

Rendigs Fels: chairman, department of economics and business administration, Vanderbilt University.

Sherwood M. Fine, Agency for International Development: temporary assignment, director, development finance, Organization for Economic Cooperation and Development, Paris.

Robert R. France: professor of economics and associate dean, College of Arts and Sciences, University of Rochester.

Frank W. Gery: associate professor and chairman, department of economics, St. Olaf College.

Joseph E. Haring: chairman, department of economics, Occidental College.

Samuel P. Hayes, University of Michigan: president, Foreign Policy Association.

W. E. Koenker: vice president for academic affairs, University of North Dakota.

E. Russel Kuchel, University of Wyoming: dean, Bradley University.

Natalie Marshall: acting chairman, department of economics, Vassar College, second semester.

John C. Murdock: chairman, department of economics, University of Missouri.

Warren C. Robinson: acting head, department of economics, Pennsylvania State University.

Herbert I. Schiller: professor of economics and chairman, department of social studies, Pratt Institute.

George P. Shultz: dean, Graduate School of Business, University of Chicago.

J. Fred Weston: vice chairman for finance, School of Business Administration, University of California, Los Angeles.

Jeffrey G. Williamson: assistant director of the graduate program in economic development, Vanderbilt University.

H. D. Woods: chairman, social sciences group, McGill University.

John Zervas: director, Northern Greece Office, Industrial Development Corporation S.A., Salonika, Greece.

Appointments

Robert L. Able: assistant professor of economics, United States Air Force Academy.

Ljubisa S. Adamovic: assistant professor of economics, Lehigh University.

R. Albert: lecturer in economics, McGill University.

J. P. Allen: professor of economics, De Pauw University.

Clopper Almon, Jr.: assistant professor of economics, Harvard University.

Shirley Almon: instructor in economics, Wellesley College.

John J. Arena: acting instructor in economics, Yale University.

Arthur G. Auble: senior planning economist, United Nations Technical Assistance Operations, Kuala Lumpur, Malaya.

William M. Bailey: instructor in economics, University of Maryland.

F. Bairstow: lecturer in economics, McGill University.

Harry L. Barrett: professor of business administration, Boston University.

William R. Belmont, University of North Dakota: Federal Reserve Bank, Minneapolis.

George J. Benston: instructor in accounting, Graduate School of Business, University of Chicago.

Elliot J. Berg: assistant professor of economics, Harvard University.

Robert A. Berry: lecturer in economics, Yale University.

Gerald O. Bierwag: assistant professor of economics, University of Oregon.

Richard A. Bilas: assistant professor of economics, University of Southern California.

Ronald G. Bodkin: lecturer in economics, Yale University.

A. James Boness: assistant professor, Graduate School of Business, University of Pittsburgh.

Samuel Brown, Bureau of the Census: lecturer and research associate, department of economics, Georgetown University.

William J. Bruns: lecturer in economics, Yale University.

Anthony J. Bryski: associate professor of economics, Lehigh University.

Duncan R. Campbell: lecturer in economics, Yale University.

Richard E. Caves: professor of economics, Harvard University.

Raymond J. Chambers: visiting professor of accounting, Graduate School of Business, University of Chicago.

Gordon C. Church: lecturer in economics, department of economics and political science, University of Saskatchewan.

Alvin Cohen: assistant professor of economics, Lehigh University.

Donald P. Cole: instructor of economics, Upsala College.

Robert E. Coleberd, Jr.: assistant professor of economics and business, Bridgewater College.

Robert L. Crouch: visiting assistant professor, Northwestern University.

George Dalton, Bard College: visiting associate professor, Northwestern University, beginning January 1963.

Jim E. Davis: assistant professor, department of economics, Long Beach State College.

Phoebus J. Dhrymes: assistant professor of economics, Harvard University.

E. Keith Dix: instructor in economics, University of Maryland.

F. Trenery Dolbear, Jr.: acting instructor in economics, Yale University.

John Douglas: assistant professor of commerce, University of Kentucky.

David F. Drake: instructor in accounting, Graduate School of Business, University of Chicago.

Emmanuel M. Drandakis: lecturer in economics, Yale University.

S. Erik Drugge: instructor in economics, Ohio State University.

Doris M. Drury: instructor in economics, University of Wyoming.

Christopher W. Dungan: instructor in business administration, Vanderbilt University.

Loretta M. Dunphy: associate professor of economics, Incarnate Word College.

Henry C. Durham, University of Munich, Germany: lecturer in economics, University of Maryland.

John W. Eilert: assistant professor of economics, St. Olaf College.

Douglas H. Eldridge: Lincoln professor of public finance, Claremont Men's College.

Stanley L. Engerman: assistant professor of economics, Yale University.

Michael J. Farrell: visiting professor of economics, Yale University, fall term.

J. Kaye Faulkner: instructor in economics, Western Washington State College.

John C. H. Fei: associate professor of economics, Yale University.

Eberhard M. Fels: professor of statistics, social sciences and mathematics, Graduate School of Business, University of Pittsburgh.

Albert A. Fitzpatrick: assistant professor of economics, United States Air Force Academy.

James W. Friedman: acting instructor in economics, Yale University.

Joseph C. Furey: instructor in economics, University of Maryland.

John Galbraith: lecturer in economics, McGill University.

Sigfried Garbuny: lecturer, department of economics, Georgetown University.

Martin A. Garrett, Jr.: instructor in economics and business administration, Vanderbilt University.

C. W. Gonick: instructor, department of economics and political science, University of Saskatchewan.

Paul Green: associate professor of marketing, Wharton School, University of Pennsylvania.

William F. Hahn: member of the professional economic staff, Bureau of Labor Statistics, Division of Wages and Industrial Relations.

Sajjad A. Hashmi: lecturer in economics, Ohio State University.

Robert H. Haveman: instructor in economics, Grinnell College.

Benjamin Higgins: visiting professor of economics, University of California, Berkeley, spring term 1963.

Robbin R. Hough: assistant professor of economics, department of business-economics, Michigan State University Oakland.

Shane J. Hunt: lecturer in economics, Yale University.

Bennett Hymer: University of Wisconsin, Milwaukee.

Stephen H. Hymer: assistant professor of economics, Yale University.

John F. Kain: instructor in economics, United States Air Force Academy.

Richard J. Kalish: instructor in economics, Lehigh University.

Nake M. Kamrany: lecturer in economics, University of Southern California.

Marshall Kaplan, Council of Economic Advisers: professorial-lecturer and research associate, department of economics, Georgetown University.

Hirschel Kasper: instructor, department of economics, Iowa State University.

Robert Katz: lecturer, department of economics, Georgetown University.

James R. Kenall, U.S. Department of Agriculture: instructor, department of agricultural economics, Ohio State University.

Shinkyung Kim: instructor in economics, University of Pittsburgh.

Sidney Klein: adjunct associate professor of economics, Columbia University, spring term, 1962-63.

Iwan S. Korocheck: assistant professor of economics, Notre Dame University.

Philip S. Kronenberg: instructor in economics, San Antonio College.

Ernst Kuhn, University of Wyoming: economist, Federal Reserve Bank, Chicago.

Eugenio F. Lari: instructor in economics, Vanderbilt University.

George E. Lent, Dartmouth College: chief, Fiscal Mission to Ecuador, Organization of American States.

Lawrence A. Leonard: associate professor of economics, Lehigh University.

William R. Leonard: deputy commissioner for technical assistance, United Nations, New York.

Harvey J. Levin: professor, Hofstra College.

Marvin T. Levine: assistant professor of economics, Ohio State University.

Arthur W. Lewis, University of the West Indies: professor of economics and international affairs, Princeton University.

N. Paul Loomba: associate professor of economics, Lehigh University.

David Loschky: assistant professor, economics department, Boston College.

Joseph Lowenberg: lecturer, department of economics, Georgetown University.

John Lowry, Graduate School of Business, University of Pittsburgh: assistant professor, University of Santa Clara.

Jacob Marschak: professor, department of economics, University of California, Los Angeles.

Joseph P. Meck: instructor in economics, University of Maryland.

Bagdan Mieczkowski: assistant professor, economics department, Boston College.

Peter Mieczkowski: lecturer in economics, Yale University.

Robert Mundell: lecturer, department of economics, Georgetown University.

J. Carter Murphy: professor of economics, Southern Methodist University.

John F. Muth: visiting lecturer in economics, Yale University.

Wladimir Naleszkiewicz: assistant professor, department of economics, Marquette University.

R. Newsom: lecturer in economics, McGill University.

Boyd Z. Palmer: operations research analyst, Atlas Chemical Industries, Wilmington, Delaware.

William N. Parker: professor of economics, Yale University.

Laurel E. Pease: instructor in economics, Denison University.

Merton J. Peck: professor of economics, Yale University.

John Peterson, associate director, Industrial Research and Extension Center, University of Arkansas: professor of economics, College of Business Administration, University of Arkansas.

Kirk R. Petshek, Mayor's Office, Philadelphia: professor of commerce and coordinator of urban research-action program in Milwaukee, University of Wisconsin.

Warren A. Pillsbury: instructor in economics, Lehigh University.

Richard C. Porter: assistant professor of economics, Yale University.

Clark R. Puckett, Federal Reserve Bank of San Francisco: assistant professor, department of economics, Long Beach State College.

Clair J. Reilly: instructor in economics, Lehigh University.

Clark W. Reynolds: lecturer in economics, Yale University.

Leigh C. Rhett: lecturer in economics, Lehigh University.

John S. Rice: lecturer in geography and industry, Wharton School, University of Pennsylvania.

John W. Rowe, Jr.: instructor, department of economics, Iowa State University.

Terence Russell: lecturer in economics, McGill University.

Richard Skinner: instructor, department of agricultural economics, Ohio State University.

Robert L. Slighton, Stanford University: economics department, RAND Corporation.

Ronald Soligo: acting instructor in economics, Yale University.

Curtis H. Stanley: assistant professor of economics, Yale University.

Ian A. Stewart, Cornell University: instructor in economics, Dartmouth College.

Donald C. Streever: director of economic research, National Analysts, Inc., Philadelphia.

Herbert E. Striner, Stanford Research Institute, Washington Office: director of program development, W. E. Upjohn Institute for Employment Research, Washington, D.C.

Adolf Sturmthal, University of Illinois: visiting professor of economics, Yale University.

John R. Summerfield, RAND Corporation: corporate staff economist, Corporate Planning and Control, Douglas Aircraft Company.

Proctor Thomson: Lincoln professor of economics and administration, Claremont Men's College.

Richard S. Thorn: economic consultant, Committee of Nine, Alliance for Progress, Washington, D.C.

Brian R. Van Arkadie: lecturer in economics, Yale University.

Paul L. van Moeseke: assistant professor, department of economics, Iowa State University.

Haskell P. Wald, Federal Reserve Bank of New York: associate director, Office of Tax Analysis, U.S. Treasury Department.

Irvin Weintraub: instructor in economics, University of Maryland.

Donald Wellington: instructor in economics, University of Wyoming.

James R. Williams: assistant professor of economics, Syracuse University.

C. Z. Wilson, Jr.: De Paul University: associate professor of business enterprise, State University of New York, Harpur College.

Thomas A. Wilson: assistant professor of economics, Harvard University.

J. W. L. Winder: assistant professor of economics, department of political economy, University of Toronto.

Donald L. Winkelman: instructor, department of economics, Iowa State University.

Francis O. Woodard: assistant professor of economics, Ohio State University.

Hsiu-Kwang Wu: assistant professor of business administration, Boston University.

Menahem E. Yaari: assistant professor of economics, Yale University.

Leaves for Special Appointments

Gardner Ackley, University of Michigan: President's Council of Economic Advisers, for two years.

Reynold E. Carlson, Vanderbilt University: Ford Foundation representative in South America, 1961-62.

William Iulo, Washington State University: economist, Office of Economics, Federal Power Commission, Washington, D.C.

Frank L. Keller, Tulane University: director, Natural Resources Division, Latin American Institute for Development Planning at Santiago, Chile, under the United Nations Technical Assistance Programme, 1962-63.

Walter Krause, State University of Iowa: visiting professor of economics, University of California, Riverside, 1962-63.

Francis Kutish, Iowa State University: Ministry of Agriculture, Columbia, July and August.

Samuel H. Newlove, University of Chicago: visiting professor of business economics and policy, School of Business Administration, University of California, Los Angeles, 1962-63.

Alvan J. Obelsky, University of Michigan, Dearborn Center: Fulbright lecturer in international economics, Kobe University, Japan, 1962-63.

Arnold A. Paulsen, Iowa State University: visiting professor, Institutionen for Rantbrukets Driftsekonomi, Uppsala, Sweden, September 1962-February 1963.

William G. Phillips, Assumption University, Windsor, Ontario: visiting professor, department of political economy, University of Toronto.

Andre Raynauld, University of Montreal: visiting professor, department of political economy, University of Toronto, spring term, 1962-63.

Robert M. Reeser, Ohio State University: Ohio State Contract Team in India for two years.

Raymond Richmond, University of Pittsburgh: Pan American Union in Panama and Colombia.

Resignations

George Bickel, Lehigh University.

Gerard Brown, Georgetown University.

Robert J. Corkhill, Lehigh University.

Donald W. Hill, Lehigh University.

Robert H. Johnson, State University of Iowa.

Monroe Newman, head, department of economics, Pennsylvania State University.

S. Ostry, McGill University.

Ben J. Pedrotti, Lehigh University.

Ryuzo Sato, University of Washington.

Jacob Stockfisch, School of Business Administration, University of California, Los Angeles.

Barry E. Supple, McGill University.

Miscellaneous

Alice Bourneuf, appointed book review editor for the *Review of Social Economy*.

Charles L. Schultze, University of Maryland, appointed assistant director, Bureau of the Budget for Fiscal Policy, Executive Office of the President.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Labor economists: Department of Labor has openings for work in the fields of wages, manpower, employment, labor and industrial labor conditions and related fields. Salaries range from \$6,435 to \$13,730 depending upon experience and training. To apply, send résumé or Standard Form 57 to the Executive Secretary, Board of U.S. Civil Service Examiners, U.S. Department of Labor, Washington 25, D.C.

Industrial organization, trade regulation, industrial concentration, structure of industry, price behavior: The Antitrust Division of the U.S. Department of Justice has openings for economists in Washington, D.C. Candidates should possess a background of education or experience in above fields. Duties involve the application of economic analysis to the enforcement of the antitrust laws. All positions are within the competitive civil service; entrance salaries range from \$5,540 to \$11,150 per annum. Write: Mr. John W. Adler, Chief, Personnel Office, Department of Justice, Washington 25, D.C.

Economics: University teaching appointment in Latin America. Prerequisites: graduate of an accredited college with major in economics and emphasis in the labor field; experience in industry or trade union desirable; prefer applicant working toward advanced degree; native fluency in Spanish; amenable in social situations. Job description: two-year contract on staff of economics department in Latin-American university. Starting salary, \$7,500 to \$8,500, plus allowances, depending upon qualifications. Send résumé. P258

Regional economics: Ph.D. or M.S. plus four years of research experience. Conduct fundamental and applied research on interdisciplinary problems in fields of regional development and long-range planning. Research on domestic and foreign areas using team approach. Send résumé of education and experience in research to L. G. Hill, Battelle Memorial Institute, 505 King Avenue, Columbus 1, Ohio.

Economics: Applications are invited for a Lectureship or Senior Lectureship in Economics at the University of New England, Australia. Post involves undergraduate teaching in economic theory and/or money and banking, and research in fields of appointee's own interest. The normal teaching load is about four class hours per week. The Department is of moderate size, at present 12 faculty members. Salary scale for Senior Lecturer: £A2,597 by £A95 to £A3,047; for Lecturer: £A1,777 by £A105 to £A2,482. Status and initial salary according to qualifications and experience. Fare to Australia paid for appointee, wife, and children, plus a baggage allowance. Appointment may be permanent or for three years. In the latter case, £A400 will be paid toward return fares. Further information obtainable from Professor of Economics, University of New England, Armidale, N.S.W., Australia.

Transportation economist: Co-operative federal-state-local agency working on comprehensive transportation plans for upstate New York metropolitan areas is seeking an economist to work on its interdisciplinary research and planning team. Examples of work are forecasting regional economic growth and studying investment in transportation networks. Beginning salary \$9,450. Full data processing, computer, and publication facilities. Send résumé, including present salary, to Roger L. Creighton, Director, Niagara Frontier Transportation Study, 79 North Pearl Street, Albany, New York.

Business administration: Position to begin September, 1963. Person whose teaching areas would be first-year accounting, management, marketing, finance, and to supervise business seminar in a small liberal arts college. Ph.D. or most requirements completed. Salary dependent upon education and experience. Apply to: Dean David A. Waas, Otterbein College, Westerville, Ohio.

Economics: Position to begin September, 1963. Person to teach principles of economics and several advanced economics courses in a small liberal arts college. Ph.D. or most requirements completed. Salary dependent upon education and experience. Apply to: Dean David A. Waas, Otterbein College, Westerville, Ohio.

Economist: With training and/or experience in regional economic analysis and development. Some knowledge of Canada's Maritime economy desirable but not necessary. Salary to \$8,000, depending on qualifications. Apply to: Director, Extension Department, St. Francis Xavier University, Antigonish, Nova Scotia, Canada.

Statistics and economics: The Internal Revenue Service in Washington, D.C., has a limited number of openings for qualified econometricians to assist in preparing studies for the Treasury Department's tax legislation program. The agency also needs statisticians with economics and economists with statistics. There are also several openings for mathematical and analytical statisticians. Civil Service requirements apply. Starting salaries range from \$7,560 to \$13,730 per annum, depending upon qualifications. To apply, send complete résumé or Standard Form 57 to Mr. Carl A. Castelda, Chief, Employment Section, Personnel Division, National Office Branch, Room 1109, Internal Revenue Service, Washington 25, D.C.

Accounting: Teacher for a small collegiate school of business in a metropolitan area in New England, starting fall of 1963. Prefer applicants with Ph.D. or substantial completion of work toward Ph.D. Full-time position in Accounting Department; no previous teaching experience necessary; rank and salary open; 9-month school year. P261

Economists: Four new openings in a rapidly growing state university in Midwest. Can be filled at any rank in almost any field of specialization. All positions require a Ph.D. in economics. Senior positions also require teaching experience, research ability, and publications. Experience directing doctoral dissertations regarded as especially valuable. One position available in February, 1963; three positions available in September, 1963. Salary (\$7,500 to \$15,000) and rank dependent upon qualifications. Write to James R. Elliott, Acting Head, Department of Economics, Northern Illinois University, De Kalb, Illinois.

Research economist: A major West Coast integrated oil company, with headquarters in Los Angeles, requires Ph.D. (or all work completed except dissertation) to develop major economic analyses and evaluate studies made by others and to predict long-range trends and short-run fluctuations in the general economy with emphasis on the western states. Experience, preferably in the petroleum field, is highly desirable but not required. The minimum annual salary for an inexperienced candidate will be \$9,000. However, the actual salary will be based on the applicant's qualifications and experience and will be supplemented by an outstanding employee benefit program. Application, with complete details and personal résumé, will be treated with strict confidence. P262

Research economist, water resources: Office of Saline Water, U.S. Department of Interior, has opening in Washington, D.C., for research economist with background in natural resources, economic geography, or utilities. Master's degree in economics is required. To assist in the administration of a challenging economic research program through contracts and grants, concerned with comparative water costs and nationwide prospects of saline water conversion. Salary range: GS-11 (\$7,560) to GS-14 (\$12,210), subject to increases under pending legislation. Send résumé or Standard Form 57 (Application for Federal Employment) to Director, Office of Saline Water, U.S. Department of the Interior, Washington 25, D.C.

International economics: Major U.S. corporation with extensive overseas operations has openings for economic analysts. Positions are in Economics Department of International Staff. Responsibilities include preparation of reports and recommendations on economic developments likely to affect foreign operations in various countries. Areas of concentration include (1) investigation and projection of foreign economies, (2) private international capital and credit transactions, (3) exchange rates. Candidate should have M.A. degree at a minimum; preferred applicants will have completed all Ph.D. requirements, except thesis. Research and teaching experience helpful. Initial salary will be commensurate with qualifications. Age limits, 25 to 45. Covering letter should accompany résumé. P263

Business administration and economics: Robert College, in Istanbul, Turkey, presents a challenge in education. An opportunity to contribute significantly to the development of a young republic is available to specialists. Graduate degrees required. Address inquiries to Miss Shirley Osmun, Personnel Officer, Robert College, Bebek Post Box 8, Istanbul, Turkey, with copy to the Near East College Association, 548 Fifth Avenue, New York 36, New York.

Statistician: The International Labor Office in Geneva, Switzerland, invites applications for a statistician to assume responsibility for the statistical aspects of manpower assessment problems, with particular emphasis on manpower in developing countries and labor requirements for economic development programs. Fuller information may be obtained by requesting Notice of Vacancy No. 721 from the Washington Branch, International Labor Office, 917 15th Street, Washington 5, D.C.

Economists: Stanford Research Institute has opportunities for economists to conduct research for development agencies of the United States and foreign governments, as well as foundations and private organizations. The studies will be concerned with development of industry, natural resources, and human resources; assistance in development programming and the building of development institutions; urban, regional, and national growth problems; application of science and technology in the developing nations; international economic relations. There are opportunities for rotation of staff assignments between international and domestic projects. The working atmosphere is academically oriented with industrial level salaries and benefits. Interested applicants should submit résumé to C. R. Wherry, Stanford Research Institute, 333 Ravenswood, Menlo Park, California.

Economist: A new position involving undergraduate-graduate instruction in a former teacher training institution which is initiating a liberal arts program (undergraduate enrollment 4,000; graduate, part-time, 2,000). Twelve-hour load teaching principles and problems courses plus electives. No negative restrictions as to race and sex. Hope to fill the position at associate professor rank. Preferably Ph.D. or at least 70 hours of graduate work. Five years of teaching or equivalent required. A dramatic salary revision possible, depending on action of the state legislature after January 1, 1963. Nine weeks of summer teaching are available. Present scales are: two semesters, \$5,500-\$7,500; summer, \$1,620. Apply to Dr. Raymond L. Lee, Social Science Department, State College, Indiana, Pennsylvania.

Economics: Principles and one advanced course, eastern Catholic men's college, beginning September, 1963. Should have doctorate or all work completed except dissertation. Instructor, \$5,400-\$6,600; assistant professor, \$6,400-\$7,600. Retirement program in addition to social security; sabbatical leave program. Rank and salary according to education and experience. Man ready for associate professor level also considered. P264

Senior economist: Economics division of New York research institution has opening for senior economist. Ph.D. in economics and experience in economic research. Combined research and teaching background desirable. Familiarity with national income accounts and application of economic theory to analysis of current developments; writing experience and skill essential. Starting salary to \$18,000, depending on qualifications. Liberal pension and other benefits. P265

Economists Available for Positions

Business research: Man, married: Ph.D. Seeks responsible, challenging position in formulation of management information requirements, computer applications to business, performance evaluation, forecasting, long- and short-range planning, and action recommendations. Compensation according to responsibility. E1044

Economic theory, international economics, history of economic thought, labor economics, money and banking, comparative economic systems, economic development, economic fluctuations, public finance, industrial organization, economic history: Man 46; M.A., Ph.D. Years of teaching experience, including graduate teaching; Ford Foundation grant. Now on university faculty. Desires teaching position with a progressive institution. E1052

International finance, economic development, public finance, monetary and fiscal policy: Man, 33; M.A., Ph.D. requirements except dissertation substantially completed. Fellowships; languages; area concentration Western Europe and Southeast Asia. Four years of research experience in government and research organization. Seeks research position. Willing to relocate. E1064

Principles, economic theory, international economics and monetary policy, economics of underdeveloped countries, business cycles and economics of growth, comparative economic systems: Man, 39, married; M.S., Columbia University, cand. Ph.D., University of Geneva; all requirements for Ph.D. completed except publication of dissertation (publication by major firm expected in 1962). Six years of successful teaching at large state university; Ford Foundation Fellow in Economics and numerous other research awards; many academic honors, including decoration by foreign government; author of 2 books, many articles; finest references. Desires teaching position with opportunity for research at rank and salary commensurate with experience. E1072

Public finance, money and banking, principles, economic thought, government and business: Man, 42; Ph.D. from distinguished midwestern university. Nine years of college teaching experience. Research experience with Federal Reserve System and state government. Learned journal publications. Desires teaching position in university or quality college with research opportunity. E1086

Business economics, statistics, public finance, money and banking, corporation finance, planning, cycles, investments: Man, 53; M.A. Successful career as administrator, economic research in government, banking, trade association, manufacturing and consulting; some teaching. Seeks university teaching, director of bureau of business research or administration or combination. E1088

Economics, finance, business administration: Man, 69. To be retired from large eastern university. Latin-American specialist, widely traveled as United Nations and Point Four expert. Fluent in Spanish, German, French; speaking knowledge of Russian. Has long list of publications. Desires position in research or teaching. Available in May, 1963. E1089

Principles of economics, business economics, consumer economics, intermediate economics, government and business, national income economics, transportation: Man, 43; Ph.D. Eight years of teaching and 5 years of business experience. Desires new position which permits concentration in one or two of the above areas. Available in June or September, 1963. E1090

U.S. economic history, international economics, economic theory and history, money and banking, corporation finance: Man, 30; M.A. from foreign university and M.A. from American; candidate for Ph.D. with course work completed. Eight years of banking experience; 5 years of writing and research with U.S. agency; some teaching experience; publications. Fellow, Royal Economic Society, Royal Statistical Society; member, Institute of Bankers, London. Wishes to devote full time to teaching and writing. Available in September, 1962. E1091

Labor economics, money and banking, economic thought, international economics, principles: Man, 26, married; B.B.A., M.A., economics. Fluent in French and Spanish; listed in American Men of Science, Leaders in American Education, 1962 eds. Résumé available. Seeks teaching, research, or administrative position with university or business. Available upon appointment. E1094

Accounting and related subjects: Man, 29, married; M.B.A., C.P.A. Experience includes 3 years of governmental auditing. Desires teaching position. E1095

Theory, mathematical economics, international economics, statistics, public finance: Man, 35, married; Ph.D. Years of successful teaching; good number of articles and book reviews. Desires teaching position at graduate level with research opportunities. Available in June or September, 1963. E1096

Economics, most fields except statistics: Man, over 50; Ph.D. Now teaching in university overseas; academic and practical work in developmental economics; federal service abroad and in Commerce Department. Would join international entity in planning or related capacity; fluent Spanish; no business courses or experience. Prefers teaching in New England, Southwest, Northwest, British Columbia, or Quebec. Available in September, 1963; perhaps earlier if offer is superior to present position. E11097

Business economics: Mature man, married; Ph.D. Successful economist for leading corporation; previous university teaching experience. Interested in opportunity to develop graduate program for business economists. E11100

Labor economics, labor legislation, collective bargaining, money and banking, history of thought, principles: Man, 39, married; B.S., A.M. Six years of full-time college teaching; research experience. Interested in teaching and/or research position, Northeast or West Coast location. Available in June or September, 1963. E11101

Public finance, monetary theory and fiscal policy, economic theory, history of economic thought, economic history: Man, 29, married; Ph.D. Eight years of teaching experience at large midwestern university, liberal arts college and state college; research experience. Rank and salary objective: associate professor, \$9,000. Desires to relocate at reputable liberal arts college or smaller university in upper Midwest. E11102

Economic principles, aggregative analysis, public and corporation finance, Russian history: Man, 34; A.B., M.A., University of Illinois (thesis in welfare aspects of public housing). Six years of statistical research work in state agencies; 3 years in mental health area. Resuming formal economics education. Desires position in economic analysis division of business, government, or other organization. Also will consider teaching. Relocate. David Patek, 2842 North Sheridan Road, Apt. 1111, Chicago 14, Illinois.

Economic theory, education economics, economic growth, business economics, Latin-American social economic development, history of economic thought: Man, 49, married; Austrian doctorate. Fifteen years of successful university teaching as professor; 10 years as head of research institute; 10 years as editor of economic journal and handbook series; broad list of original publications, including four books; fluent German, French, and Spanish. Now engaged for important international governmental agency as expert for economics and statistics at South American university. Desires change as mission ending; especially prefers research and/or teaching in Northeast or West Coast research-conscious environment. Will consider other opportunities. E11103

Principles of economics, economic theory, business fluctuations, labor economics, money and banking, finance: Man, 31; course work for Ph.D. completed in 1959. Three years of teaching experience, last position as associate professor. Presently working as a research economist with a U.S. government agency. Desires teaching and/or research position with a challenge. Will relocate. Available immediately. E11104

Economic principles and theory, money and banking, American and European economic history, statistics, economic development, regional economic planning and development, management, accounting: Man, 35, married; Ph.D. Eight years of teaching experience on college level (5 years in Europe); publications on regional economics; administrative experience. Would like opportunity to continue with research; location secondary to teaching and research opportunities. Desires temporary (1 year) or permanent teaching position. E11105

Economic theory, statistics and decision theory, mathematics, labor economics, industrial organization, international economics: Man, 39, married; writing dissertation. Teaching experience; fellowship recipient. Seeks teaching position for spring semester. E11106

Comparative systems, money and banking, corporate finance: Man, 38, married; B.A., M.A., Ph.D. College, university, government, and business experience; modest publication record. Interested in research but presently deeply involved in administrative details of headship. Seeks full professorship with opportunity to complete research and writing in progress. E11107

Investments, finance, international relations: Man, 57; M.S., Ph.D. Broad business experience, including administration as department head; various publications; excellent references. Desires teaching position. E1108

Economics, business administration: Man, 55, married; Ph.D. Twelve years of business experience; 18 years of teaching experience. Available in June or September, 1963. E1109

Economics of growth and development, economies of Southeast Asia, economic theory, public finance, international economics, money and banking: Man, 42, married; A.B., A.M., Ph.D. from a leading American university. Approximately 10 years of teaching experience at graduate and undergraduate levels in large well-known university in a Southeast Asian country; publications. Available immediately. Would also accept 1963 spring semester or summer appointment. E1110

Managerial economics and accounting, statistics: Taking general examinations in economics; 5 years of teaching experience. Will situate in the East or Midwest. Available in February, 1963. Norbert Michaud, Department of Economics, Ohio Wesleyan University, Delaware, Ohio.

Economic development and growth, principles, intermediate economic theory: Man, 30, married; B.A., M.A., all requirements for Ph.D. except thesis completed at large midwestern university. Published. Teaching position in New York City or immediate vicinity desired for February, 1963. E1111

Long-range planning, market studies, forecasting, regional economics, transportation: Man, 35, married; B.A., M.A. Experience includes general business and sales, public agency budget and performance analysis, consultant to legislative committees, long-range plan formulation and administration, short- and long-range forecasting, commodity studies, market analysis. Presently corporate economist. Seeks position with growing business or research organization. E1112

Finance, management, mathematics, statistics: Man, married; Ph.D. in business administration with science background. Teaching experience; currently professor and head of department of eastern liberal arts college. Interested in management science and graduate teaching. E1113

Economic theory, international economics, money and banking, economic growth and development, government and politics of Soviet Union: Man, 32, married; degree in law from Europe, Ph.D. candidate in economics. Three years of college teaching; research experience with the local government; publications. Fluent in German, Russian, Serbo-Croatian. U.S. citizen. Fellowship recipient. Widely traveled. Desires position in teaching and/or research. E1114

Labor, institutions, intermediate theory, economic development: Young woman; completing M.S. Woodrow Wilson Fellow; business, university teaching, and research experience. Desires position in teaching and/or research, business. Available in February, 1963. Karen E. Shallcross, 210 North Frances Street, Madison, Wisconsin.

Agricultural economics: Man, 35; degrees in agriculture, economics, and agricultural economics from German (Halle), Canadian (Toronto), and American (Penn State) universities; expects to receive Ph.D. in December, 1962. Experience in teaching, government research; academic honors, including 1960 Best Master's Thesis Award (Canadian Agricultural Economic Association). Contributor of articles to professional journals; excellent references. Seeks position in university, international organization, or business. Available in February, 1963. D. Elz, Department of Agricultural Economics, Pennsylvania State University, Weaver Building, University Park, Pennsylvania.

Economics, finance, geography, investments, securities: Man, 31; M.A., Ph.D. candidate. Scholarship holder; 5 years of experience in statistics, securities analysis, and economics. Representative N.Y. Stock Exchange. Desires part-time teaching schedule in Metropolitan New York City. Available in spring or fall, 1963. E1115

Economics, marketing, business finance: Man, 37, married; M.B.A., Ph.D. Business and college teaching experience; now on a college faculty. Desires a teaching position with opportunity for research. Available in June or September, 1963. E1116

Labor economics, manpower: Man, 40; B.A., M.A. Experience in teaching, research, operation, administration; knowledge of Manpower Development and Training Act. Fair knowledge of Spanish; publications. Overseas assignment welcome. E1117

Public finance, price and macro theory, principles, history of economic thought, higher education: Man, married; Ph.D. except for completion of thesis. Eleven years of college and university teaching experience. Currently employed in Great Lakes area; would like a location farther west. Available in September, 1963. E1118

Economic theory, comparative systems, econometrics, government and business, principles: Man, 38, married; Ph.D. Nine years of teaching in a large American university and in Southeast Asia. Desires teaching opportunity in small or medium-sized school. Available in September, 1963; possibly sooner. E1119

Economic principles, labor economics, labor law, public utilities, economic thought, comparative systems, economic history, industrial organization: Man, 32, married; M.A., Ph.D. dissertation in process. Seven years of college teaching; member of state panel of arbitrators; consultant to industry and labor; recipient of research grant; supervisor of State Department project; experience as research assistant and job analyst; lecturer at adult schools. Desires teaching position at liberal arts college or university. Available in September, 1963. E1120

Economic theory, Keynesian economics, business economics, business forecasting, statistics, money and banking, credit and finance, economic development of underdeveloped areas, labor problems and law, employment and unemployment, social security, industrial sociology: Man, 36; Ph.D. candidate in economics. Fluent in Chinese and English. Held responsible positions both in China (government) and United States (stock market). Desires position in research or teaching. E1121

Marketing, labor, government, finance, government and industry, national income-business cycles, history of economic thought: Man, married; Ph.D. Nineteen years of college teaching experience. Desires teaching position in New England or New York State. Available in September, 1963. E1122

Economic principles, money and banking, international economics, economic theory, comparative economic systems: Man, 43, married; Ph.D. Eleven years of teaching, graduate and undergraduate, at state university; 3 years of research and teaching overseas. Desires teaching or research position at university of business. Available in September, 1963. E1123

Business statistics, economic theory, agricultural economics, comparative economic systems, international economics, money and banking: Man, 41; M.S., Ph.D. Presently teaching in a liberal arts college. Desires teaching position with a progressive institution. Available in January or June, 1963. E1124

Economic theory, business and industrial economics, taxation, law: Man, 39; Ph.D., LL.B., LL.M. Member of state and federal bars; practicing attorney; legal and economic consultant; university teaching; publications. Desires an industrial or university position of quality in re salary and opportunity. E1125

Comparative economic systems, economics of central planning, Soviet economy, economic development, national income analysis: Man, 41. Associate professor in good standing with his college; good record of publications in America and in Europe; research and government experience; in *American Men of Science*. Interested in a teaching position with opportunity of research in above fields. Available in September, 1963. E1126

Development economics: Man, 37; B.A. in economics with philosophy and politics, M.A., Ph.D. in economics. Five years of university teaching experience; 3 years of practical experience with area specialization in Far Eastern economic history, politics, and current developmental problems; publications; currently with an international organization. Enjoys teaching per se but time for research essential. Seeks university position primarily in the field of development economics. Available in September, 1963. E1127

Economic development, international trade, money and banking, principles, business cycles: Man, 36; M.A., Ph.D. Twelve years of teaching and research experience, including graduate teaching. Now on university faculty (assistant professor). Desires teaching position in a university where there are opportunities for teaching and research in the field of economic development. Available in June or September, 1963. E1128

Principles, economic theory, international economics, history of economic thought, money and banking, statistics: Man, 31, married; M.S., presently completing doctoral dissertation in area of international economics. Fellowship recipient. Four years of teaching experience; publication. Presently teaching in Europe. Desires teaching position. Excellent references. Available in September, 1963. E1129

L'INDUSTRIA

Review of Political Economy

Editor: Ferdinando di Fenizio

J. TINBERGEN	Development Theory: An Econometrist's View
F. MÖLLER	Information Content of Business Mirrors
L. J. ZIMMERMAN	La méthode de la planification économique
U. GRENANDER	Modern Trends in Time Series Analysis
S. RICOSSA	Upon Capital Coefficients in Italy
G. LUNGHINI	Notes upon the "Prima Matrice Siderurgica Italiana" and other Partial Matrices
f.d.f.	A Premise to Economic Planning: Social Consciousness—Shall We Succeed in Attaining a High Growth Rate in Next Years Too?—Import Duties and Monetary Stability—Comments upon a Recent Speech by Minister La Malfa—The Wage Level and National Output.

Each number contains Summaries in English of the original articles—Annual subscription rate for Abroad: Lit. 6.000=.

Editorial and Administrative Offices: Via Farneti, 8—Milano (Italy)

BACK NUMBERS WANTED

The Association will pay fifty cents a copy for the following issues (sent prepaid and in good condition) of the *American Economic Review*: September, 1946; June, 1958; September, 1960; March, May, 1962.

Send to

The Secretary

AMERICAN ECONOMIC ASSOCIATION

Northwestern University, 629 Noyes Street, Evanston, Illinois



This deceptively simple equation is the real reason why you enjoy the best and the most telephone service in the world at the lowest possible price.

It represents the relationship between three basic units that equal one unified Bell System.

1. Patient research and development by Bell Telephone Laboratories create constantly improved communications techniques. (Telstar is one recent example.)
2. Efficient manufacture by Western Electric delivers equipment you can depend on, day after day, year after year.
3. Skillful operation by 21 Bell Telephone Companies supplies service at a high standard of performance to families and farms, to industry and government.

The work of these units is closely coordinated by the American Telephone and Telegraph Company, advising and planning for the progress and efficiency of the entire system.

That's why we say, "Three equals one"—and why you can pick up your own telephone at home and talk to almost anyone else in all 50 states of the union or any of 167 foreign countries around the world—quickly and economically.



BELL TELEPHONE SYSTEM

Owned by more than two million Americans

NEW

Books of Vital Interest

☐ INCOME AND WELFARE IN THE UNITED STATES

By JAMES N. MORGAN, HARVEY E. BRAZER, WILBUR J. COHEN, *all of the University of Michigan*; and MARTIN H. DAVID, *The University of Wisconsin*. 544 pages, \$7.95.

A national personal-interview survey is employed to study the distribution and redistribution of income, what determines peoples' incomes, and the intergenerational transmission pattern. The analysis of this survey combines demographic, economic, and social-psychological measurements on each family studied to give a detailed explanation of what determines the economic position of that family.

☐ ECONOMIC SECURITY IN THE UNITED STATES

By VALDEMAR CARLSON, *Antioch College*. Economics Handbook Series. 240 pages. \$6.50.

This challenging text asks the reader to study the subject of economic security objectively. It is a venture in institutional economics, written to provide a synthesis or a perspective on economic security. The book maintains that the scope and character of economic security in the United States is determined by the imperatives of the market system. Each of the programs of economic security is covered in the context of a functioning economy. The text helps the reader gain an overall understanding of each of the programs of economic security, including private pension plans and welfare programs, by subordinating details of individual acts in favor of historical developments and theoretical interpretations.

☐ THE FIRM: Microeconomic Planning and Action

By NEIL W. CHAMBERLAIN, *Yale University*. 448 pages, \$7.95.

This text provides a framework within which economic theory of the firm can

be meaningfully set, and within which business policies can most fruitfully be analyzed. It portrays the planning function (with its emphasis on organization, fund flows through time, and relating the organization to its environment) as a profitable meeting ground for the scholar and practitioner. Underscores the importance of the planning function to the firm and the economy.

☐ INTRODUCTION TO LABOR ECONOMICS, Third Edition

By ORME W. PHELPS, *Claremont Men's College*. 566 pages, \$7.50.

Describes the principal forces at work in the U.S. labor market (employer, employees, unions, and government agencies) and the issues raised by their interaction. Over half the book deals with labor unions: their history, organization, methods, legal status, and objectives. The remainder of the text discusses and analyzes the general character of the labor force and the labor market, the economics of wages, and the modern theory of employment.

☐ INTERNATIONAL ECONOMIC INSTABILITY

By JOSEPH D. COPPOCK, *Earlham College*; currently Director, Foreign Economics Advisory Staff, Office of the Under Secretary, U.S. Department of State, Washington, D.C. Economics Handbook Series. 192 pages, \$7.95.

Describes and explains international economic instability, emphasizing the years since World War II with a view to evaluating and devising measures for reducing such instability when it serves no useful purpose. The basic approach is empirical, stressing policy considerations. Contains highly original material in chapters three and four, including some new and interesting factual conclusions about international economic instability during the postwar years. The country approach is stressed, since countries are the primary organizational units for dealing with the problem.

Send for copies on approval

McGRAW-HILL Book Company



Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

UPCOMING to the Economist

□ SECURITY ANALYSIS: Principles and Technique, Fourth Edition

By B. GRAHAM, *The University of California, Los Angeles*; D. L. DODD, *Columbia University*; S. COTTLE, *Stanford Research Institute*. 800 pages, Textbook Edition \$9.95.

An excellent book, comprehensively updated. Devoted to the pragmatic aspects of security analysis and security selection in context of professional investment management. Gets down to the basics of selecting and rejecting securities for investment purposes, and endeavors to show readers how to go about it. Substantial revision permits book to take a position on all major problems that exist today in the analysis and appraisal of common stocks. A very valuable book for anyone interested in the investment of securities.

□ ECONOMICS, Principles, Problems, and Policies, Second Edition

By CAMPBELL R. McCONNELL, *University of Nebraska*. Available in March, 1963.

A thoroughly up-dated and expanded revision of a widely-acclaimed introductory economics textbook. As in the first edition, the basic purpose is a clear and definitive presentation of the principles of economics. The author has used the *economizing problem*—the dilemma of scarce resources and unlimited wants—as the unifying principle or theme for the many diverse topics discussed in the text. The treatment is rigorous. Difficult subject matter is not omitted or de-emphasized, but rather is given more extended treatment verbally, numerically, and graphically. One of the most distinguishing features of the book is the author's thorough treatment of microeconomics. Text can be used for either a one semester or two semester course.

□ THE FINANCIAL HISTORY OF THE UNITED STATES, Second Edition

By PAUL STUDENSKI and HERMAN E. KROOSS, *New York University*. Available in January, 1963.

This completely up-dated revision describes, analyzes, and interprets what has happened to the history of government financial activity and policy: government expenditures, revenues, debt operations, debt management, and money and banking. History and theory have been interwoven throughout to give the reader an understanding of how and why fiscal and monetary policies have evolved from their very simple beginnings in the Colonial period to the complicated system of the 1960's. Text can be used at either the undergraduate or graduate level. It covers all the ramifications of the interrelationship between the government and the money supply, with careful attention to the whole existing body of fiscal and monetary theory. It includes the most exhaustive set of statistics on Federal finance available anywhere.

□ ECONOMETRIC METHODS

By J. JOHNSTON, *The University of Manchester, Manchester, England*. Available in January, 1963.

Up-to-date text provides a new approach toward teaching econometrics. Starting with the assumption that most students will have had a year of statistical theory and method, book begins at this level and builds an integrated and self-contained development up to and including the latest theoretical developments. Part I contains a full exposition of the linear normal regression model and Part II expounds the main statistical methods now available for the estimation of econometric models. Matrix algebra is used for exposition and book includes chapter covering all elements of matrix algebra required. Numerical examples illustrate text and a selection of problems is given at the end of each chapter.

330 WEST 42nd STREET, NEW YORK 36, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

new

INTERNATIONAL TRADE *and* DEVELOPMENT

Gerald M. Meier

This clear and concise book sets forth the fundamental principles of the international economics of development and considers the main topics in the pure theory and monetary theory of international trade from the standpoint of international development. Traditional trade theory is shown to offer a powerful set of fundamental principles for illuminating development problems of underdeveloped countries. Discussions are analytically coherent; central issues are clarified; the major insights are consolidated. 209 pp. \$4.25.

new

PRICING POWER and the PUBLIC INTEREST

A Study Based on Steel

Gardiner C. Means

The co-author of *The Modern Corporation and Private Property* here presents a new concept for bringing prices into line with the public interest. "Means combines in striking and original fashion a number of institutions into a suggested pattern of industrial self government. . . . An outstanding achievement. . . . The book is more than thought provoking; it is an outstanding contribution and ahead of its time." *American Economic Review* "A new book by Gardiner Means is bound to be an event. . . . His suggestions are creative and should receive prolonged study and critical discussion. . . . Means is to be congratulated on his courage as well as on his insight." Kenneth E. Boulding \$7.50

HARPER & ROW, PUBLISHERS

49 E. 33d St., N.Y. 16, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



BOOKS

New in '62 . . .

STATISTICAL MANAGEMENT OF INVENTORY SYSTEMS

(Publications in Operations Research No. 6)

By HARVEY M. WAGNER, *Stanford University; Consultant to McKinsey and Co. Inc., the RAND Corporation, and Service Bureau Corporation.* Emphasizing and exploring the fundamental difficulties in the implementing of Operations Research policies, this book focuses on the designing of consistent sets of control schemes and provides the necessary tools for analyzing inventory control devices. Stress is placed on the control of personnel as well as on the fashioning of inventory procedures. 1962. 235 pages. \$8.95.

PRICE, OUTPUT, AND INVENTORY POLICY

**A Study in the Economics of the Firm and Industry
(Publications in Operations Research No. 7)**

By EDWIN S. MILLS, *The Johns Hopkins University.* The author formulates, analyzes, estimates and tests models of firms' decision making and emphasizes careful integration of theoretical and empirical studies. Interdisciplinary in nature the book draws on work in economics as well as in operations research and management. 1962. 271 pages. \$7.95.

LABOR LAW

By NICHOLAS S. FALCONE, *Fordham University.* A chronological presentation of labor law beginning with 1349 in England and continuing with contemporary experiences flowing from the enactment of the 1959 Landrum-Griffin Act, this book is divided into two parts: one dealing with the evolution of the labor law in England, and the second covering the complete development of labor law in the United States. 1962. 502 pages. \$7.95.

ESSAYS ON PROBABILITY & STATISTICS

By M. S. BARTLETT, *University College, London.* A consistent and comprehensive view of statistical theory is represented by these papers delivered over a long period by the author. This collection is an elementary, but relevant commentary on the controversial problem of statistical inference. 1962. 127 pages. \$4.50.

Send for examination copies.

JOHN WILEY & SONS, Inc.

440 Park Avenue South, New York 16, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

TEXTS FROM APPLETON-CENTURY-CROFTS

RISK AND INSURANCE

by James L. Athearn, University of Florida

Written in clear, nontechnical language, this recent text applies the modern concept of risk to teaching the principles of insurance.

526 pages, illustrated, \$6.95

"In using the approach of risk management, Professor Athearn has written one of the best introductory texts available for a one-semester course." Edmund E. Smith, University of Portland, Oregon, College of Business Administration.

ELEMENTS OF MODERN STATISTICS

by Boyd L. Nelson, University of Maryland

This recent book, written for courses in elementary business and economics statistics, provides students with sufficient knowledge to apply statistics in their fields, to understand their power and usefulness, and to realize their limitations.

366 pages, illustrated, \$6.00

"An unusually good elementary text. It is well-organized and has a good elementary treatment of statistical theory without an excess of descriptive materials." Roger L. Burford, Georgia State College of Business Administration.

APPLETON-CENTURY-CROFTS

Division of Meredith Publishing Company

34 WEST 33rd STREET, NEW YORK 1, NEW YORK

CAPITALIST AND SOCIALIST ECONOMIES

A Marxist Analysis of Modern Political Economy

By ROBERT BRUCE DRISCOLL

Marxian economics (as extended by Driscoll) scientifically relates value, price, productivity, credit, and inflation:

$$(P'/V)_0 = (P'/u) \times (u/V);$$

(Price of value of a commodity) = (Price) \times (Productivity). P' is monetary price; V is value in average labor time of production; u is a given use value such as an automobile, a pair of shoes, a lathe, etc.

Aggregate price of value is the aggregate price of the aggregate value of all commodities sold to final users during an accounting period.

$$(P'/V)_t = (P'/V)_0 [1 - C''/(G' + L' + M')]^{-t} = (P'/V)_0 \times (IF);$$

aggregate price of value at time t is equal to aggregate price of value at earlier time $t = 0$, multiplied by the *inflationary factor* (IF): unity divided by unity less the ratio of net aggregate extension of credit by finance capital divided by the aggregate price of all commodities (gold, labor power, goods and services) sold to final consumers in the period $0 - t$.

Inflation is primarily of the price of value; only secondarily is price affected, and then only in conjunction with the effects of productivity.

$$CIF_n = IF_1 \times IF_2 \times IF_3 \dots IF_n;$$

the cumulative inflationary factor for a series of n successive accounting periods is the cumulative product of the inflationary factors for each period.

$$(P'/V)_n = (P'/V)_0 (CIF_n).$$

The above relationships are confirmed by overall U.S. economic data for the period 1935-1960.

101 pp. (8½ \times 11) including 6 pp. national economic data, 8 figures, table of contents, index, political footnotes. Mimeographed, elite type, 24 lb. white paper, stapled and masked. Postpaid. Soft cover \$1.00. Hard cover \$2.00.

Order by mail from: AARDVARK PRINTING DEPARTMENT

INVENTIONS DEVELOPMENT COMPANY

P.O. Box 3842, Portland 8, Oregon

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

New Texts from The Dorsey Press

**PUBLISHED
IN THE
DORSEY
SERIES
IN
ECONOMICS**

THE NATURE OF PRICE THEORY

By H. H. LIEBHAFSKY, *Professor of Economics,
University of Texas*

This new up to date book contains a clear, precise presentation of basic concepts and relationships incorporated in a more completely integrated and comprehensive coverage than is found in any other price theory textbook on the market. Basic concepts are illustrated in four different ways: (1) verbally, (2) continuing simple algebraic formulations, (3) arithmetical illustrations based on the algebraic formulations, and (4) graphs based on the arithmetical illustrations. To comprehend the material, the student need only have a basic knowledge of elementary algebra. *Ready in January.*

Also Consider:

ECONOMICS: Principles and Issues

By Delbert A. Snider, *Miami University*

This basic text for introductory courses explains economic principles and theory in a way that is most revealing and meaningful for contemporary economic problems and issues. An accompanying *Workbook* by Wallace I. Edwards is available.

LABOR ECONOMICS

By Chester A. Morgan, *State University of Iowa*

In this basic text for courses in labor economics or labor problems, the material is organized in a connected, continuous, and concise presentation which is characterized by a continuity not generally found in the usual approach.

WRITE FOR 90-DAY EXAMINATION COPIES



**THE DORSEY PRESS, INC.
HOMewood, ILLINOIS**

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



2 timely paperbacks—

ECONOMIES OF THE WORLD TODAY:

Their Organization, Development and Performance

CLAIR WILCOX, WILLIS D. WEATHERFORD, JR. and HOLLAND D. HUNTER. ■ A new supplement that offers concise assessments of five major economies—the Soviet Union, Great Britain, Communist China, India, and the United States. Includes analyses of such topics as individualism and collectivism, market economies, command economies, and those economies that are now either initiating development or have attained maturity. 148 pages, \$1.85

"It is superbly written, imaginative in its use of statistics and charts, and tied together in a matrix of up-to-date economic insights. . . . The treatment is compact, challenging, thoroughly objective and skillfully adapted to Socratic classroom techniques."—Theodore J. Kreps, Stanford University

THE DOLLAR IN CRISIS

Edited and with an introduction by SEYMOUR E. HARRIS. ■ A penetrating appraisal of the continuing dollar and gold problem by thirteen foremost authorities in international economics. 309 pages, \$3.95

"A fine collection of monographs which should be useful as collateral readings in such courses as Money and Banking, International Trade and Finance."—William A. Carter, Dartmouth College. "An important guide to professional opinions of the causes and the cures of the dollar crisis. It is all the more interesting because it contains numerous clues to the reasoning of some of the President's advisers."—*The New Republic*

HARCOURT, BRACE & WORLD, INC.

750 Third Avenue, New York 17, New York
1855 Rollins Road, Burlingame, California

THE PUERTO RICAN ECONOMY AND U.S. ECONOMIC FLUCTUATIONS

By WERNER BAER
Yale University

With introduction by J. K. Galbraith

An empirical study of the propagation of economic fluctuations to a developing economy. 1962, *paperbound*, pp. xvi, 155, \$3.50

A publication of the
Social Science Research Center
University of Puerto Rico
Rio Piedras, Puerto Rico

CZECHOSLOVAK NATIONAL INCOME AND PRODUCT, 1947-1948 and 1955-1956

By Thad Paul Alton and Associates

Dr. Alton and his associates present an independent estimate of Czechoslovak national product for the years 1947-1948 and 1955-1956—the only estimate available. Using a fully articulated national accounting system, they show in the current market prices the transactions among the sectors of business enterprises, households, government, and the foreign sector. Derived from these accounts are the familiar national aggregates. Distorting elements in the market prices are identified, and the GNP is adjusted both by sectors of origin and by final uses, delineating the economic structure in terms of resource costs.

271 pages

tables

\$5.00

THE CHINESE INFLATION, 1937-1949

By Shun-hsin Chou

Using modern economic theory, Dr. Chou analyzes the inflationary spiral which disrupted the Chinese national economy: the monetary areas, the dual economy, demand-pull vs. cost-push, the effects of monetary factors on the inflation, and its social implications. The question of excess demand is examined with reference to each of the economic sectors, covering not only the process by which the inflationary pressures rose in each, but also the processes by which such pressures were diffused from one sector to another during the course of the inflation. The author demonstrates that the Chinese inflation was primarily a condition of "autonomous expansion of demand" (government spending and investment for ownership benefit) and "responsive price and wage increases."

To be published in May

384 pages

\$8.50



COLUMBIA UNIVERSITY PRESS

2960 Broadway, New York 27, N. Y.

harper torchbooks

JOSEPH A. SCHUMPETER	CAPITALISM, SOCIALISM, AND DEMOCRACY: Third Edition. TB/3008 \$2.25
PAUL MANTOUX	THE INDUSTRIAL REVOLUTION IN THE EIGHTEENTH CENTURY: <i>An Outline of the Beginnings of the Modern Factory System in England.</i> Revised Edition. Preface by T. S. Ashton. TB/1079 \$2.45
THOMAS C. COCHRAN	THE AMERICAN BUSINESS SYSTEM: <i>A Historical Perspective, 1900-1955.</i> TB/1080 \$1.35
WILLIAM MILLER, Ed.	MEN IN BUSINESS: <i>Essays on the Historical Role of the Entrepreneur.</i> Enlarged Edition. TB/1081 \$2.25
PETER F. DRUCKER	THE NEW SOCIETY: <i>The Anatomy of Industrial Order.</i> TB/1082 \$1.95
T. C. COCHRAN and WILLIAM MILLER	THE AGE OF ENTERPRISE: <i>A Social History of Industrial America.</i> TB/1054 \$2.35
J. H. PARRY	THE ESTABLISHMENT OF THE EUROPEAN HEGEMONY: 1415-1715: <i>Trade and Exploration in the Age of the Renaissance.</i> TB/1045 \$1.35
PERRIN STRYKER	THE CHARACTER OF THE EXECUTIVE: <i>Eleven Studies in Managerial Qualities.</i> TB/1041 \$1.60
JOHN U. NEF	CULTURAL FOUNDATIONS OF INDUSTRIAL CIVILIZATION. TB/1024 \$1.25
EDITORS OF FORTUNE	AMERICA IN THE SIXTIES: <i>The Economy and the Society.</i> 72 2-color charts. TB/1015 \$1.85

■ For a complete catalog of Torchbooks (263 titles to date) please write to Dept. 36, Harper & Row, Publishers 49 E. 33 St., N.Y. 16

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Outstanding RONALD books . . .

FUNDAMENTALS of ECONOMICS

RUBY TURNER MORRIS, *Connecticut College*

Student-oriented throughout, this highly readable introductory textbook provides a broad background in economic theory and a detailed description of how the economic order operates. It offers a uni-

fied, balanced treatment of microeconomics and macroeconomics; stresses practical applications of theory. The analysis is distinguished for its clarity. 1961. 878 pp., *illus.* \$7.00

MONEY, BANKING, and MONETARY POLICY

CLIFTON H. KREPS, Jr., *University of North Carolina*

This important new textbook affords the student a thorough understanding of the national economic significance of monetary and banking policy. Theory is woven throughout in a highly integrated approach to the essential principles of money and banking. Attention is thus

focused on the "why" of institutional processes rather than the "how." The analytical discussion of the history of money and banking development places in true perspective the complex issues of theory and policy. 1962. 607 pp. \$7.50

ELEMENTS of BUSINESS ENTERPRISE

DWIGHT L. GENTRY and CHARLES A. TAFF—both *University of Maryland*

A balanced and teachable presentation of the entire scope of business administration. This textbook interrelates the functions of management and integrates the role of business enterprise in the so-

cial and economic order. It avoids confusing detail and treats all areas of operation and administration with proper emphasis. 1961. 705 pp., *illus.* \$7.00

ADVERTISING MANAGEMENT

NUGENT WEDDING, *University of Illinois*; and
RICHARD S. LESSLER, *Grey Advertising, Inc.*

NEW! This book provides a detailed and practical treatment of the concepts and principles underlying sound decision-making in advertising. Written by men of recognized authority in the field, it encourages the student to think criti-

cally and creatively on the all-important management functions involved in the profitable use of advertising in marketing goods and services. 1962. 620 pp., *illus.* \$8.50

THE RONALD PRESS COMPANY

15 East 26th Street, New York 10, New York

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

STATISTICIANS

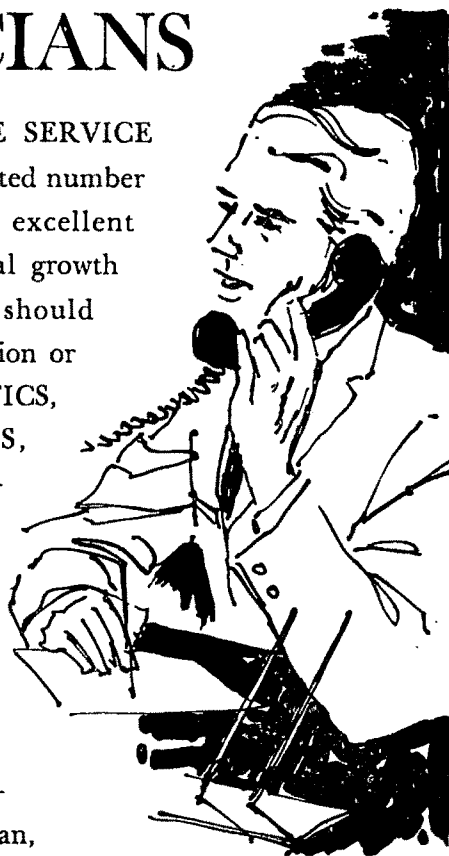
The INTERNAL REVENUE SERVICE in Washington, D. C. has a limited number of challenging openings and excellent opportunities for professional growth and advancement. Candidates should possess a background of education or experience in: MATHEMATICS, ANALYSIS, ECONOMICS, OPERATIONS or ADMINIS-

TRATION ■ Starting Salaries range from \$8,045 to \$12,845

per year depending upon qualifications. Civil Service requirements apply. Liberal benefits include vacation and sick leave, health and life insurance, excellent retirement plan,

paid holidays and military leave with pay. ■ The

Internal Revenue Service employs statisticians primarily in the National Office in Washington, D. C. However, there is one vacancy in each of the following cities: Ogden, Utah; Lawrence, Massachusetts; Atlanta, Georgia; and Kansas City, Missouri. One additional position will be established in January 1963 in Philadelphia, Pennsylvania. These field positions are in service centers and the starting salary is \$11,150.



■ TO INDICATE YOUR INTEREST IN ONE OF THESE PROFESSIONAL OPPORTUNITIES, PLEASE SEND RESUME OR WRITE TO:
CHIEF, NATIONAL OFFICE BRANCH
PERSONNEL DIVISION, ATTENTION: A:P:NP
INTERNAL REVENUE SERVICE
12TH STREET AND CONSTITUTION AVENUE, N.W.
WASHINGTON 25, D. C.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Princeton



Aspects of Labor Economics

Conference of the Universities-National Bureau Committee for Economic Research.

The eight studies included in *Aspects of Labor Economics* explore such areas as the economics of occupational licensing, the pecuniary and nonpecuniary income effects of monopoly and competition, and the "profitability and viability" of pre-Civil War American negro slavery as an industry. Wage differentials are analyzed from two different approaches: labor unions and their wage effects, and findings of recent research on relative differentials tested in the light of economic theories. *Published for the National Bureau of Economic Research.* 384 pages. Charts, tables. \$7.50

The Production and Distribution of Knowledge in the United States

By FRITZ MACHLUP

Investigating education, research and development, communications media, information machines, and information services, the author describes the allocation of human, fiscal, and natural resources in knowledge-production. The output of each field is evaluated in terms of its productivity and growth, and its contribution to the over-all body of knowledge. 400 pages. \$7.50

Research on Family Planning

Edited by CLYDE V. KISER

This volume describes and evaluates the current state of research and examines the likelihood of future progress in family planning. It discusses programs investigating attitudes toward family planning, effectiveness of specific birth control devices and techniques, and efficiency of areawide education and action. Particular attention is given to the problems of the developing areas and the difficulties of motivating the peoples of these countries to learn about, accept, and practice family planning. 700 pages. Charts, tables. \$12.50

Order from your bookstore, or
PRINCETON UNIVERSITY PRESS
Princeton, New Jersey

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

This man is building a car. Not alone, of course. He's an employe in a General Motors plant . . . just one important producer in a team of more than six hundred thousand employes. He's energetic, progressive, reliable . . . knows his job and does it right.

PRODUCER

It's people like this producer, far more than anything else, who are the key to General Motors. It's production people, supervisors, draftsmen, stylists, salesmen, engineers . . . people who design, decide, direct, DO!

More than a million shareholders, men and women, young and old, have invested in the efforts and productiveness of General Motors people. Every one of them has a stake in General Motors . . . and GM's biggest stake is in its *people*.

GENERAL MOTORS
IS PEOPLE
Making Better¹
Things For You



Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

OXFORD BOOKS

OF EXCEPTIONAL INTEREST

CASE STUDIES IN EUROPEAN ECONOMIC UNION

By J. E. MEADE, H. H. LIESNER, and S. J. WELLS. Based on a study of the three long-established European economic unions—Belgian-Luxembourg Economic Union, Benelux, and the European Coal and Steel Community—this book tries to answer such questions as: can commercial unions be built without a unification of national tax policies and wage rates? can a partial union covering only some commodities work effectively if it does not cover other closely related activities? (*Royal Institute of International Affairs*)

\$6.10

NOMADS AND COMMISSARS

Mongolia Revisited

By OWEN LATTIMORE. A lively picture of Mongolia today, by the only American who has traveled in all the major regions of the China-Russia frontier and also speaks and reads the three most important languages of that frontier. Beginning with a geographical and historical survey, the author goes on to explain how Marxism succeeded in a country of nomads, and how Mongolia keeps its balance between the two giants of Communism. 8 pages of halftones; endpaper map.

\$5.75

THE AWAKENING OF SOUTHERN ITALY

By MARGARET CARLYLE. Beginning with a general discussion of the geographical and psychological factors that have contributed in the past to the poverty of southern Italy and Sicily, the author goes on to write from her own experience of the change in attitude towards this region since World War II, and of the real progress that has been made since 1950. 8 plates; map.

\$3.40

STUDIES IN INDUSTRIALIZATION IN NIGERIA AND THE CAMEROONS

By F. A. WELLS and W. A. WARMINGTON. Based on case studies of various individual industries and labor groups in Nigeria and the Cameroons during the years 1956 to 1961, this volume examines the many factors that have gone into the ever-increasing rate of industrialization in these two newly independent areas.

\$5.60

At all bookstores

OXFORD UNIVERSITY PRESS, New York 16

ECONOMISTS

AND

THE NATIONAL SECURITY

The Institute for Defense Analyses will appoint a small number of imaginative and highly capable economists for research involving foreign policy and national security. Research will be directly related to problems of the Office of Secretary of Defense, the Joint Chiefs of Staff, and other executive agencies of the government. This relationship affords an unparalleled opportunity both to the experienced economist and to the individual just embarking upon his career in economics.

Research projects may include military allocation and evaluation problems, arms control, civil defense, foreign military aid, and economic development, depending upon IDA's needs and the interests of its staff. Economists at IDA can explore vital

problems, and evolve new techniques, while making significant contributions to economic, military and foreign policy.

The favorable research environment includes encouragement of individual publication in IDA reports and professional journals. Those who wish will have an ample opportunity for interdisciplinary inquiries. And the IDA staff includes many outstanding physical scientists.

The Institute, a civilian, non-profit corporation, is sponsored by eleven of the major universities in the United States. For further information write the Assistant to the President, Institute for Defense Analyses, 1666 Connecticut Avenue, N.W., Washington 9, D.C. IDA is an equal opportunity employer.

California Institute of Technology • University of Chicago
Case Institute of Technology • Massachusetts Institute of Technology
Columbia University • University of Illinois • Pennsylvania State University
University of Michigan • Princeton University • Stanford University • Tulane University



Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



CAPITALISM AND FREEDOM

By Milton Friedman. The author of *A Program for Monetary Stability* expounds his view of the proper role of competitive capitalism as simultaneously a device for achieving economic freedom and a necessary condition for political freedom. 320 pages. \$3.95

LANDMARKS IN POLITICAL ECONOMY

Earl J. Hamilton, Albert Rees, and Harry G. Johnson, editors. This distinguished collection from 70 years of the *Journal of Political Economy* includes key works by Veblen, Pareto, Viner, Schumpeter, Paul H. Douglas and Milton Friedman, to name but a few. 544 pages. \$10.00

HOUSING AND INCOME

By Margaret G. Reid. Housing, its values and rents, studied in relation to normal or expected long-run income. The results of this study go completely contrary to previous findings, indicate 1) that proportion of income spent on housing rises as income increases, 2) that housing consumption decreases as housing prices rise. Of particular value to those concerned with housing, taxation and subsidy, and to econometricians studying consumption and income. Price to be announced

FREE RESERVES AND THE MONEY SUPPLY

By A. James Meigs, New York Stock Exchange Economist. Although many observers look to the weekly estimate of member-bank free reserves as a measure of the "tightness" of current monetary policy, this study concludes that the volume of free reserves is neither a good proximate objective for Federal Reserve open-market operations nor a dependable indicator of Federal Reserve influence on behavior of member banks. \$4.00

through your bookseller, or

UNIVERSITY OF CHICAGO PRESS

Chicago 37, Illinois

In Canada: The University of Toronto

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

current

A monthly magazine for the concerned citizen bringing together in one place the significant new material from all sources on the frontier problems of today

John W. Gardner, President

Chester Bowles

Leo Cherne, Executive Director
Institute of America

Paul G. Hoffman, Managing Director
United Nations Special Fund

"Current is indispensable to a busy man who is interested in the very newest writing about society and its problems."

current 905 Madison Avenue, New York 21, N. Y.

Please enter my subscription to Current at the special rate for students and faculty of \$5. (Regular subscription \$8.) I shall receive a full year of Current (12 issues). My payment (\$5.) is enclosed.

Name _____

Address _____

City _____ Zone _____ State _____

School Affiliation _____

I am not eligible for the Educational Rate; please enter my subscription at the Introductory Rate of \$7. for one year _____ (Regular Rate \$8.) My payment is enclosed.

B-1

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

PRINCIPLES OF ECONOMICS

C. E. Ferguson and Juanita M. Kreps,
both of Duke University

Aware of recent concern over economic growth and inflation, Professors Ferguson and Kreps have shifted the usual textbook emphasis to these problems. Their book is organized around the three currently dominant national objectives; (1) a relatively stable price level, (2) full and stable employment, (3) continued growth of per capita output. This clearly written book, with over 150 color illustrations, is planned for a one-year introductory course. 1962, 864 pp., \$7.95

NATIONAL INCOME:

ITS MEASUREMENT, DETERMINATION,
AND RELATION TO PUBLIC POLICY

Sam Rosen, University of New Hampshire

An upper-division and first year graduate text in macroeconomics and social accounting containing sections on income accounting, determination, and policy. Includes such relatively new devices as input-output, balanced budget multiplier, flow of funds, national balance sheets, and Phillips curve.

Jan. 1963, 384 pp., \$6.50 tentative

SOVIET UNION:

PARADOX AND CHANGE

Robert T. Holt and John E. Turner, both
of the University of Minnesota; et al.

This book neither condemns nor praises Russia, but rather tries to understand the quality of life in that changing country. City growth, economic changes, agricultural production, and technology are some of the areas studied by the authors who journeyed through Russia together and are experts on Soviet affairs.

Nov. 1962, 256 pp., \$4.50 tentative

HOLT, RINEHART AND WINSTON, INC.

383 Madison Avenue, New York

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

The CENTER OF ECONOMIC RESEARCH
in Athens announces the publication
of the following titles.

- 1) *A Strategy for Greek Economic Development*
by Andreas G. Papandreou
- 2) *Surplus Labor in Greek Agriculture, 1953-1960*
by Adam A. Pepelasis and Pan A. Yotopoulos
- 3) *Fruit and Vegetable Marketing in the Economic Development
of Greece*
by Chester O. McCorkle, Jr. in association with
A. Dermetzopoulos
- 4) *Greek Regional Development*
by Benjamin Ward
- 5) *Land Fragmentation in Greece*
by Kenneth Thompson
- 6) *Fundamentals of Model Construction in Macro-economics*
by Andreas G. Papandreou
- 7) *Notes on the Theory of Economic Planning*
by Roy Radner
- 8) *The Morphology of Greek Industry*
by George Koutsoumaris
- 9) *The Socio-economic Origins of the Greek Industrialist*
by Alec Alexander

Nos. 1 through 6 will be available by late summer 1962, while Nos. 7 through 9 will be available by January 1963.

Address: Director, Center of Economic Research, Amerikis 6, Athens, Greece

**The Center of Economic Research is a Greek-American Organization
sponsored by the University of California.**

Johns Hopkins

The Economic Development of Spain

*Report of a Mission Organized by the International Bank
for Reconstruction and Development*

After long isolation, Spain is moving now toward closer integration with the European economy. This World Bank study focuses on the Spanish government's role in guiding the economy. It deals extensively with transportation, agriculture, industrial expansion, power, education, housing, and the tourist trade. 432 pages. \$8.50

The Future of Alaska

Economic Consequences of Statehood

By GEORGE W. ROGERS, author of *Alaska in Transition*—Traces the growth of economic and political autonomy through Alaska's shifting status as native land, colonial territory, military preserve, and, ultimately, America's 49th state. Special emphasis is put on natural resources as the "Alaskan challenge"—fish and wildlife, timber, minerals, and water power. 320 pages. \$6.50

Land Economics Research

Edited by JOSEPH ACKERMAN, MARION CLAWSON, and MARSHALL HARRIS—Fifteen papers on various aspects of research on land use and tenure—its history and development, theory and philosophy, methodology and programming. From a symposium sponsored by the Farm Foundation and Resources for the Future, Inc.

270 pages (paperbound). \$4.00



At your bookseller's . . . or from

The Johns Hopkins Press

Baltimore 18, Maryland

ECONOMIC ISSUES AND POLICIES

Readings in Introductory Economics

Arthur L. Grey, Jr., and John E. Elliott, Editors

A group of 67 carefully selected readings by authoritative contemporary economists describe and discuss the institutions of economic society and questions of public policy. Vital contemporary problems are skillfully interwoven; excellent biographical notes and introductions to each Part and to each selection are included.

420 pages, paper

1961

\$3.75

ECONOMIC POLICY

Business and Government

Donald Stevenson Watson

This text enables the student to investigate all areas of contemporary economic policy and to observe the relationships among them. It considers the whole setting and function of government in the economy, and explores the ethical, political, and economic value judgments that are the basis of economic philosophies.

829 pages

1960

\$7.75

ECONOMICS: THEORY AND PRACTICE

Melville J. Ulmer

This concisely written introduction to economics focuses on a clear, balanced coverage of four major areas: economic growth, income theory, theory of price and distribution, and world economics. A *Student's Manual* helps the student systematically to review the material in ECONOMICS by providing for each chapter and each appendix a series of true or false statements, multiple choice, and essay questions.

638 pages

1959

\$7.25



Houghton Mifflin Company

BOSTON • NEW YORK • ATLANTA • GENEVA, ILL. • DALLAS • PALO ALTO

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Studies in Comparative Economics

A new approach to the teaching of economics is presented in this series of volumes launched by an Inter-University Committee on Comparative Economics composed by leading American educators.

The Economics of Labor

BY E. H. PHELPS BROWN. Ranging widely in time and space, a British economist surveys the diversity of arrangements under which the world's work has been done—the varying status of the worker in the community and the changing relations between employer and employed. A mainspring of economic growth has been the improvement of the labor force, and the author asks how this has come about and how it can be promoted today. He asks also how the labor force gets deployed between different regions, industries, and occupations, in the traditional and authoritarian as well as in the market economies. cloth \$6.00; paper \$1.45

Foreign Trade and the National Economy

BY CHARLES P. KINDLEBERGER. Foreign trade has always been discussed in comparative terms, as the name of its most famous principle—the Law of Comparative Advantage—suggests. This book, however, is organized not by countries but analytically, and discusses two broad questions: (1) What determines the nature and amounts of the goods a country buys and sells in international trade? and (2) What is the impact of foreign trade on national economic life? cloth \$6.00; paper \$1.45

Price Formation in Natural Gas Fields

A Study of Competition, Monopsony, and Regulation

BY PAUL W. MACAVOY. The assumptions and objectives of national policy in the regulation of gas fields are subjected to close examination in this new volume in the Yale Studies in Economics. Mr. MacAvoy describes the characteristics of monopoly price formation, and of competitive and monopsony (buyer's monopoly) price formation, in order to see which corresponds most closely to actual field prices in recent years. \$6.75

Human Action

A Treatise on Economics

BY LUDWIG VON MISES. *New Revised Edition.* First published in 1949, this presentation of the point of view of a "conservative" economist has been reprinted five times. A revised edition is offered now as a new conservative movement gains strength in the United States. This is a systematic study of the manifold activities of human beings in search of food, shelter, and the variety of goods they have come to need. *Coming in April* \$15.00

Yale University Press



New Haven and London

Canadian orders:

McGill University Press, Montreal 25

←← Important New College Textbooks

FINANCIAL INSTITUTIONS—Their Role in the American Economy

by GILBERT COOKE, Bowling Green State University, CHARLES PRATHER, University of Texas, FRED CASE, University of California at Los Angeles and DOUGLAS BELLEMORE, New York University.

A comprehensive study of American financial institutions, organization, function and relation to the flow of funds in the money market. The book is authoritatively written, thorough in its coverage, and its fresh approach to financial decisions of the firm, the money market, working capital and credit, mortgage financing, and the capital market is characterized by unusual clarity and teachability.

501 pp. 6 x 9 Cloth \$7.75 (text edition)

COLLECTIVE BARGAINING—Principles, Practices and Cases

by MAURICE TROTТА, Associate Professor of Industrial Relations and Management, New York University.

Presents the historical and legal setting of the collective bargaining agreement and then the bargaining process in terms of organization and strategy and governmental and non-governmental aid to collective bargaining. A provocative treatment of the implementation of the labor contract follows. Scores of cases dealing with the problems of interpretation that have been the subject of arbitration are, in particular, fully covered.

Ca. 512 pp. 6 x 9 Cloth \$7.50 (text edition)

INTERNATIONAL FINANCE

by MAX J. WASSERMAN, CHARLES W. HULTMAN and LASZLO ZSOLDOS, all of the Patterson School of Diplomacy and International Commerce, University of Kentucky.

A thoroughly up-to-date basic treatment of international finance, clearly presented within a framework of the international monetary system which conditions it. With the dollar as the world's international and banking reserve money, the authors cover the U.S. balance of payments as a key phenomenon in international finance.

Ca. 368 pp. 6 x 9 Cloth \$7.50 (text edition)

PROBLEM MANUAL FOR INVESTMENTS

by DOUGLAS H. BELLEMORE and JULIAN G. BUCKLEY, both of the Graduate School of Business Administration, New York University.

A student's manual containing questions and problem materials for use in college courses in investments. While the manual is organized around the coverage of the subject as presented in Bellemore's INVESTMENTS, the material is basic to any beginning course in investments and may be used in connection with any standard textbook. The materials have been thoroughly class-tested and constitute an important new teaching aid in this field.

92 pp. 5½ x 8¼ Paper \$2.50

MANAGEMENT ACCOUNTING PROBLEMS

by WILLIAM H. CHILDS, Professor of Accounting, Hofstra College.

A collection of problems for those college courses in first year accounting which emphasize the management approach. The intensely practical nature of this problem material results from the fact that many of the problems have been taken from actual business situations. While this manual has been organized around a basic college textbook written by the same author (Childs' *Accounting For Management Control*) it may be readily adapted for use with any standard first year text. The case problems appeal particularly to teachers seeking rigor in the level of problem-working.

Ca. 186 pp. 8½ x 11 Paper \$2.75 (tentative)

SEND FOR YOUR EXAMINATION COPIES

SIMMONS-BOARDMAN BOOKS

30 Church Street, New York 7, N. Y.



Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

NEW AND CURRENT TITLES

BUSINESS STATISTICS

2nd Edition—By John R. Stockton

The University of Texas

This book gives the student sufficient acquaintance with the most commonly used methods of analysis and enables him to use statistical data effectively in making business decisions. A laboratory manual and 57 transparencies for use on an overhead projector are available for the second edition of this popular textbook.

BUSINESS CYCLES AND FORECASTING

2nd Edition—By Carl A. Dauten

Washington University, St. Louis

Six new chapters are included to provide increased emphasis on economic theory. The second edition provides an analytical presentation of cycle theory, forecasting principles, and policies for economic stability.

PREFACE TO ECONOMETRICS

By Michael J. Brennan, Brown University

Here is an introduction to quantitative methods that can be understood by the undergraduate. Emphasis is placed on applications of economic theory, quantitative measurement, and tests of correctness of theory. Problems conclude each chapter.

SOUTH-WESTERN PUBLISHING CO.

(Specialists in Business and Economic Education)

Cincinnati 27 New Rochelle, N.Y. Chicago 44 Burlingame, Calif. Dallas 2

AMERICAN AND BRITISH TECHNOLOGY IN THE NINETEENTH CENTURY

By H. J. Habakkuk

*Chichele Professor of Economic History in the
University of Oxford*

Why did some countries invent and adopt mechanical methods more rapidly than others? Was the cause one of finance and labour, or the rate of growth of the market? Professor Habakkuk avoids the ready answer, too pat and perfect to reveal the complex nature of technological growth. Instead he allows the comparative history of American and British progress to form theses with built-in qualifications, with nuances underlined, with exceptions a part of the rule. The attitudes of entrepreneurs, the influence of forms of industrial organization on the choice of techniques, the difficulties of borrowing a technology from another country, the relations of economic growth and technical progress—all these are an integral part of his argument and his answer.

"Neither of these theses—the response to a scarcity of labour and 'the penalty of taking the lead'—is new. But what is here, in this lucid and sinewy discussion, is a closer and more critical examination of them, illumined with a more confident reference to the technological record, than we have had before. And, in passing, it indicates many promising byroads for more detailed inquiry by other economic historians."—*The Economist*

\$6.00

CAMBRIDGE UNIVERSITY PRESS

32 East 57th Street • New York 22, N.Y.

COMING IN JANUARY

MARKET THEORY AND THE PRICE SYSTEM

**By ISRAEL M. KIRZNER, Associate Professor of Economics,
New York University**

This provocative new text is designed for use in an undergraduate course in intermediate price theory. Focusing on the market, market prices and resource allocation as achieved through the market, the text adopts the approach that the market is essentially a process of adjustment between individual market participants in response to the patterns imposed by the activities of others. Decision making and activity on the part of individuals, especially the entrepreneur, is seen as centrally important to the market process; and market theory, in the view of the author, consists of an analysis of the step-by-step adjustments these decisions stimulate and the way the information required for these adjustments is communicated. Emphasis is on the kind of change that can be expected when there is *disequilibrium*, and equilibrium positions are not treated as important in themselves. Diagrams illustrate economic principles and serve as an aid in grasping the logic involved; the result is a theoretical text which provides the student with the opportunity to consciously exercise economic reasoning in abstract terms.

350 pp.

6 x 9

approx. \$6.00

OTHER DISTINGUISHED TEXTS IN THE VAN NOSTRAND SERIES IN BUSINESS ADMINISTRATION AND ECONOMICS

ACCOUNTING PRINCIPLES

By Andrew D. Braden, Associate Professor of Accounting, Western Reserve University and Robert G. Allyn, Executive Secretary, Board of CPA Examiners, New York State

Just Published, 708 pp. \$8.25

THE AMERICAN ECONOMY

By Betty G. Fishman, Lecturer in Economics and Leo Fishman, Professor of Economics and Finance, both at West Virginia University

1962, 822 pp., \$7.95

FUNDAMENTALS OF BUSINESS ENTERPRISE

By Paul G. Hastings, Associate Professor of Business Administration, Sacramento State College

1961, 641 pp., \$6.95

AN INTRODUCTION TO ELECTRONIC DATA PROCESSING FOR BUSINESS

By Leonard W. Hein, Associate Professor of Business Administration, Los Angeles State College

1961, 320 pp., text ed. \$7.50

D. VAN NOSTRAND COMPANY, INC.

120 Alexander Street

Princeton, New Jersey

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

**NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH
NEW DELHI, INDIA
RESEARCH PUBLICATIONS**

1. **TECHNO-ECONOMIC SURVEYS OF DIFFERENT STATES IN INDIA**—evaluates the potential resources of the different States and suggests guide lines for industrial development in the next 10 years. Price as follows:
 Madhya Pradesh, Punjab, Orissa, Assam, and Andhra Pradesh Sh. 35/- \$5.00 each
 Manipur, Tripura and Himachal Pradesh Sh. 25/- \$4.00 each
2. **TAXATION AND PRIVATE INVESTMENT**—dealing with economic effects of Indian tax system on private savings and investment. Price Sh. 18/- \$2.50
3. **LONG TERM DEMAND FOR AND SUPPLY OF SELECTED AGRICULTURAL COMMODITIES IN INDIA, 1960-1975**—making demand and supply projections of various commodities in India during 1960-1975. Price Sh. 25/- \$3.50
4. **SAVING IN INDIA**—dealing with estimates of savings for major sectors of Indian Economy. Price Sh. 20/- \$3.00
5. **URBAN INCOME AND SAVING**—deals with the composition and distribution of personal income and saving in urban India. Price Sh. 18/- \$2.50
6. **THE MANAGING AGENCY SYSTEM**—analysing recent changes in the system in India. Price Sh. 18/- \$2.50
7. **TRAFFIC SURVEYS OF DIFFERENT PORTS IN INDIA**
 Mangalore and Malpe Sh. 18/- \$2.50
 Beypore Sh. 13/- \$2.00
 Karwar, Honavar and Coondapur Sh. 28/- \$4.50
8. **DEMAND FOR ENERGY IN INDIA**—projecting the energy requirements in India for the period 1960-75. Sh. 13/- \$2.00
9. **DOMESTIC FUELS IN INDIA**—dealing with consumption pattern of domestic fuels in urban cities. Price Sh. 37/- \$5.50
10. **LOOKING AHEAD**—prospects of India's Economy and Trade in 1981. Price Sh. 11/- \$1.50
11. **CURRENT PROBLEMS OF PLANNED ECONOMY**—five years of research by NCAER. Price Sr. 15/- \$2.50

*Enquiries solicited from booksellers for stocking and
sale of our publications on usual trade discount
Available from the Publications Division,*

**NATIONAL COUNCIL OF APPLIED ECONOMIC RESEARCH,
11, Indraprastha Estate, New Delhi-1, INDIA.**

**CURRENT AND FUTURE
OPPORTUNITIES IN WASHINGTON AND ABROAD WITH**

SRC

SURVEYS & RESEARCH CORPORATION

1010 VERMONT AVENUE—WASHINGTON 5, D.C.

TELL US IN CONFIDENCE WHETHER YOU ARE AVAILABLE—FULL-
TIME, PART-TIME, SABBATICAL YEAR—YOUR FIELDS: ECONOMIC
DEVELOPMENT, MANAGEMENT ECONOMICS, INDUSTRIAL ECO-
NOMICS, TRANSPORTATION ANALYSIS, STATISTICS,
OPERATIONS RESEARCH.

An Equal Opportunity Employer

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

OXFORD texts in economics



ECONOMICS

By ABRAHAM L. GITLOW, New York University

Combining careful analysis, thorough application of economic theory and a lively writing style, this volume is a sound, up-to-date text for introductory courses in economics. Its central unifying theme is a major issue of our times—the contest between a free market system and economic authoritarianism. Economic growth, full employment, national security, and social welfare are among the principal contemporary problems viewed as aspects of the basic theme. Chapter summaries and extensive bibliographies are included.

1962 768 pages 175 figs. and tables \$7.50

ECONOMICS WORKBOOK

By ABRAHAM L. GITLOW and DANIEL E. DIAMOND.

1962 160 pages paperbound \$2.00

READINGS IN ECONOMICS AND POLITICS

Edited by H. C. HARLAN

The articles in this absorbing collection focus on twelve basic political-economic problems, among them: agriculture, business, capital, labor, taxation, monetary and fiscal policy, inflation, employment, and economic foreign policy.

1961 704 pages paperbound \$2.75

PROBLEMS OF AMERICAN ECONOMIC GROWTH

By BRUCE R. MORRIS, University of Massachusetts

Written at an elementary level of analysis, this text challenges the student to examine and formulate his own solutions to the major issues concerning economic growth in the United States. A wide variety of problems are covered, including raw materials, labor supply, capital, government expenditures, technological change, and relations with other economies.

1961 256 pages paperbound \$2.50

MONEY AND INCOME:

An Outline of Monetary Economics

By A. C. L. DAY, London School of Economics, and
S. T. BEZA, Princeton University

A careful survey of modern macro-economic theory, including substantial coverage of United States monetary history and institutions.

1960 640 pp. illus. \$7.50

TOWARDS A MORE GENERAL THEORY OF VALUE

By EDWARD H. CHAMBERLIN, Harvard University

Sixteen essays on Professor Chamberlin's theory of monopolistic competition, its development and its application to specific economic problems.

1957 330 pp. \$5.00

OXFORD UNIVERSITY PRESS

417 Fifth Avenue, New York 16

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



THE COLLEGE DIVISION OF ALLYN AND BACON INVITES YOU TO EXAMINE THE FOLLOWING TEXTS

Designed to accompany any basic economics text, the presentation reflects a new approach in the arrangement of subject matter. The text consists of six sections to give the student an introduction to economics and its methodology as well as development. Included are the basics of micro and macro theory, and an examination of international economic problems.

CONTEMPORARY ECONOMICS: SELECTED READINGS

by REUBEN E. SLESINGER and
ASHER ISAACS

The text integrates basic supply and demand analysis with an analysis of economic problems. Price theory is approached in terms of total cost—total revenue; then marginal cost—marginal revenue. The authors present a detailed treatment of the economic development of the Western World along with the simultaneous development of economic doctrines.

ECONOMICS: PRINCIPLES, PROBLEMS & PERSPECTIVES

By HOWARD S. DYE, JOHN R.
MOORE and J. FRED HOLLY

This second edition of a popular text includes a great deal of new material and revisions. Probability has been expanded to include formal discussions of joint, conditional, and marginal probability. The authors stress the concepts underlying statistical methods to lead the student toward a fuller understanding of the use of statistical techniques as tools of management decision-making.

FUNDAMENTAL STATISTICS FOR BUSINESS AND ECONOMICS, 2ND ED.

by JOHN NETER and
WILLIAM WASSERMAN

This combination workbook and study guide contains a multitude of practice problems and practical examples of statistics as used in business and industry. Designed primarily to help the student evaluate his own progress, the workbook facilitates the grading of assignments, and provides additional examples and illustrations for lecture problems.

ELEMENTARY STATISTICS WORKBOOK

by BYRON L. NEWTON



FOR YOUR EXAMINATION COPIES PLEASE WRITE TO:

ARTHUR B. CONANT, ALLYN AND BACON, INC.

150 TREMONT STREET, BOSTON 11, MASSACHUSETTS

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

from **RANDOM**  **HOUSE**

.....

THE EXPERIENCE OF ECONOMIC GROWTH

Case Studies in Economic History

by **BARRY E. SUPPLE**, *University of Sussex*

Effectively organized to introduce the student to the historical experience of economic growth as exemplified in the industrialized countries, this outstanding new reader marks a first in its field. The editor's lucid, comprehensive introduction unifies an invaluable, remarkably varied collection of scholarly essays.

February 1963; 448 pages; \$6.95 text

READINGS IN BUSINESS FLUCTUATIONS, GROWTH, AND STABILIZATION

by **JOHN J. CLARK**, *and* **MORRIS COHEN**,

St. John's University *Associate Editor, Fortune Magazine*

These carefully selected readings from the most eminent classical and contemporary thinkers represent, in effect, a major assessment of the advantages and limitations of the system of private enterprise. Providing a thoroughly logical and orderly examination of our own economic structure in the face of serious Soviet economic rivalry, this superb new collection brings together the subject's most significant literature.

Spring 1963; about 600 pages; \$6.50 text

TRADE UNIONS IN THE AGE OF AFFLUENCE

by **WILLIAM H. MIERNYK**, *University of Colorado*

A lucidly written survey of the growth of trade unions and the evolution of collective bargaining in the United States. This title initiates the new Random House Studies in Economics series.

(SE 1) *November 1962; 192 pages; paperbound \$1.95 text*

.....

RANDOM HOUSE • The College Department • 501 Madison Avenue • New York 22

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

NOTICE

To MEMBERS and SUBSCRIBERS

INCREASE IN RATES

At the March 23-24, 1962, meeting of the Executive Committee of the Association, it was decided to adopt the following rate schedule, effective as of January 1, 1963:

Annual dues	\$ 8.00
Family membership	1.00
Junior (student) membership	4.00
Subscribing membership	10.00
Contributing membership	25.00 or more
Subscription to the <i>A. E. R.</i>	8.00

The members of the Executive Committee felt this action was necessary to enable the Association to continue present services to its members and to meet rising publishing costs of the *American Economic Review* and a new edition of the *Handbook*. It should be noted that membership dues and subscription rates have not been changed since 1950. The present schedule of rates is well below that of most other professional organizations.

HAROLD F. WILLIAMSON
Secretary

ECONOMIA INTERNAZIONALE

Quarterly Review

Vol. XV, No. 2

CONTENTS

May, 1962

Customs Unions and Underdeveloped Countries*R. S. Bhambri*

Autofinanziamento d'impresa e sua importanza nella moderna economia
.....*L. d'Ales Sandro*

The Leontief Paradox and the Ohlin-Heckscher Theory of the Basis of Com-
modity-Trade*J. L. Ford*

La teoria de l'inflazione di Bent Hansen*A. J. Hagger*

A Decade of Planned Development: The Indian Experience*V. V. Bhatt*

Le pratiche restrittive e i monopoli in Australia*A. Hunter*

Bollettino Bibliografico ed Emerografico: Books Reviews—Titles of articles in recent
periodicals—Summary of articles issued in recent periodicals.

Annual subscription to "Economia Internazionale" It. Liras 5.000. Applications for sub-
scription and correspondence should be addressed to the Direzione Istituto di Economia
Internazionale, via Garibaldi 4, Genova (Italy).

THE SOUTH AFRICAN JOURNAL OF ECONOMICS

Editors:

W. J. BUSSCHAU

C. S. RICHARDS

H. M. ROBERTSON

(Managing Editor)

Volume 30, No. 3

September, 1962

Cost Inflation and Economic InstitutionsProfessor L. M. LACHMANN

Review of the Financial and Economic Situation in South Africa ..Dr. M. H. DE KOCK

Safety for SavingsDr. E. H. D. ARNDT

Currency and Banking in EthiopiaZ. A. KONCZACKI

Iron and Steel—Future Industry for Border Areas?J. P. NIEUWENHUYSEN

Single Copy: R 0.95 (9s.6d) Annual Subscription R 3.50 (£1. 15s. Od.)

The South African Journal of Economics is published quarterly, in March, June, Septem-
ber and December. Orders may be placed through all leading booksellers or with the Jour-
nal Secretary. Editorial communications, contributions (in duplicate), and books for re-
view should be addressed to the Joint Editors, P.O. Box 5316, Johannesburg.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

OXFORD ECONOMIC PAPERS

Editorial Board: N. H. Leyland (General Editor), J. R. Hicks, P. D. Henderson, C. M. Kennedy, G. B. Richardson, M. F. G. Scott, J. F. Wright (Secretary).

Volume 14

June 1962

Number 2

CONTENTS

Real Balances and Consumption	F. H. Hahn
Idle Balances and the Motives for Liquidity	A. J. L. Catt
Balanced Growth	S. K. Nath
Investment Criteria Under Capitalism and Socialism	J. Black
Economic Development with Unlimited and Limited Supplies of Labour	S. Enke
A Theory of Inflation and Growth in Under-Developed Economies Based on the Experience of Latin America	Dudley Seers
Inflation and the Bond Rate: A Postscript	R. J. Ball
Alternative Patterns of Growth: A Reply	K. N. Raj and A. K. Sen

Oxford Economic Papers is published three times a year in February, June and October. The pre-paid subscription price is 35s. 0d. (\$5.25) post free, and the price of a single copy 16s. 0d. net. Orders may be placed with any bookseller or sent direct to the Publisher. One specimen copy will be sent free on request.

OXFORD UNIVERSITY PRESS
AMEN HOUSE, WARWICK SQUARE, LONDON, E.C.4.

ÉCONOMIE APPLIQUÉE

Archives de l'Institut de Science Economique Appliquée
(The French Journal of Economic Science)

Tome XV

Juillet-Septembre 1962

- P. L. REYNAUD: La psychologie scientifique et l'appréciation méthodique du dynamisme économique.
- A. LAUTERBACH: Comportement économique en Amérique Latine.
- C. A. THANOS: Marché monétaire et opérations d'open-market.
- B. TEW: Le marché financier et la théorie du financement des investissements.
- O. L. ALTMAN: L'or russe et le rouble.
- J. SOLTERER: Une théorie générale du développement économique—Dialogue avec Akerman.
- J. DESSAU: Définition et rémunération de la petite innovation.
- A. COTTA, J. COUSSY, J. WEILLER, J. BARNOUIN, J. VORANGER, J. WISEMAN: L'Economie de marché et les changements de politique économique (Cahier P N° 6)
- J. POIRIER, L. MASSIGNON, M. HAMIDULLAH, J. C. FROELICH, D. JACQUES-MEUNIE, A'DEL S. FAHIM: Archaisme et modernisation dans l'Islam contemporain (V N° 8)
- G. LEDUC et J. C. PERRIN: Madagascar, études et perspectives économiques (cahier F N° 17)
- S. STROUMILINE, N. FEDERICI, F. ARCHIBUGI, M. DAVID, R. PRESSAT, A. GOUT, A. TIANO: Economie du Travail (Cahier AB N° 2)
- B. BADOUN, N. CEPPE, J. MILHAU, J. KLATZMANN, C. BROUSSOLLE: Profrès et Agriculture (Cahier AG N° 1)
- L. BUQUET, M. DUMAS, M. FARDEAU: Propagation du progrès économique—industrie chimique et aéronautique (Cahier AI N° 1)

ECONOMIE APPLIQUEE et CAHIERS DE L'INSTITUT DE
SCIENCE ECONOMIQUE APPLIQUEE

Directeur: François PERROUX; Secrétaire Général: H. BONJOUR
(I.S.E.A., 35, Boulevard des Capucines, Paris 2e).

The subscription price is 2,800 Frs. per year.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

LAND ECONOMICS

a quarterly journal of

PLANNING, HOUSING & PUBLIC UTILITIES

Among Articles Appearing in November 1962 issue:

- The Indian Peasant, the State and Economic Development *Walter C. Neale*
National Programs for Urban Renewal in Western Europe *Leo Grebler*
Cost Behavior and Pricing Policy in the Post Office *Morton S. Barata*
Developments in the British Coal Industry *Joseph A. Hasson*
Cyclical Sensitivity of Public Utilities: 1947-1959 *Wallace F. Lovejoy and David A. Bowers*
The Economic Effect of a Progressive Net Profits Tax on Decision-Making by the
Mining Firm *Allyn O. Lockner*
The Relative Performance of Individual Electric Utilities *William Iulo*

Annual Subscription \$6.00

Single Copy \$2.00

Social Science Building, University of Wisconsin

Madison 6, Wisconsin

KYKLOS

International Review for Social Sciences
Revue Internationale des Sciences Sociales
Internationale Zeitschrift für Sozialwissenschaften

Vol. XV—1962—Fasc. 4

- A Keynesian Model of the Price Level and the Constant Wage Share .. *Sidney Weintraub*
Wages, Prices and Productivity *Paul Streeten*
Repressed Inflation in West Germany from 1945 to 1948. Some Qualitative Observations *Nicholas Balabkins*
Strukturwandlungen in der Rohstoffversorgung in der Europäischen Eisen- und Stahlindustrie *Ernst-Wolf Mommsen*
Quantitative Adaption of Education to Accelerated Growth .. *H. Correa and J. Tinbergen*
Observations on Japan's Ten-Year Growth Plan *Kenneth K. Kurihara*
Sozialstaatlichkeit und Neoliberale Gesellschaftsordnung *Rudolf Kraus*

Review Articles:

- Bemerkungen zu Erich Schneiders Ausgewählten Kapiteln der Geschichte der
Wirtschaftstheorie (Edgar Salin)
Radicalism and the Revolt against Reason (Jean Beauté)
Values and Intentions (G.L.S. Shackle)
Theories of Economic Growth (Morris Singer)

Besprechungen—Comptes rendus—Reviews

Bibliographie—Bibliography

Autoren—Auteurs—Authors

All articles are followed by tri-lingual summaries.

Published Quarterly. Annual subscription Swiss Fr. 26.- (postage included).

Order from your bookstore or from the publisher: KYKLOS-VERLAG, Postfach 785, Basel 2, Switzerland.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

ECONOMICA

Published Quarterly

Vol. XXIX

November 1962

No. 116

CONTENTS

- Wage Drift *E. H. Phelps Brown*
A Model of Technical Progress, the Production Function and Cyclical Growth
..... *A. R. Bergstrom*
Externality *James M. Buchanan and Wm. Craig Stubblebine*
Capital Resources, Equilibrium and Growth *S. A. Ozga*
The Marginal-Cost Price of Coal, 1956-1957 *Millard Long*
Anticipated and Unanticipated Consequences of Public Debt Creation
..... *H. Laurence Miller, Jr.*
On Sales-Maximising and Oligopoly Behaviour *William G. Shepherd*

MEMBERS OF THE AMERICAN ECONOMIC ASSOCIATION may subscribe at the specially reduced rate of 25s. (\$3.71) per annum. Subscriptions should be sent to the Secretary and Treasurer, American Economic Association, Evanston, Illinois, accompanied by a cheque drawn in favour of ECONOMICA, London School of Economics and Political Science.

INTERNATIONAL SOCIAL SCIENCE JOURNAL

A quarterly review published by UNESCO, the
United Nations Educational, Scientific and Cul-
tural Organization



Just Issued:

COMMUNICATION AND INFORMATION

Volume XIV, Number 2, 1962

- I: *Introduction*, by E. Jacobson and Paul J. Deutschmann, Michigan State University.
Trends in Communication Research in Japan, by Hidetoshi Kato, Kyoto University, Japan.
The Sociology of Information in France, by Alain Girard, Institut National d'Etudes
Demographiques, Paris.
The Significance of Opinion Surveys in Public Life, by Elisabeth Noelle and Gerhard
Schmidtchen, Institut für Demoskopie, Federal Republic of Germany.
Mass Communication and the Social Sciences: Some Neglected Areas, by Marten Brouwer,
University of Amsterdam.
Opinion Influentials and Political Opinion Formation in Four Swedish Communities, by
Bo Anderson, University of Uppsala.
Some Problems of Communication Research in Israel, by S. N. Eisenstadt, Hebrew Uni-
versity, Jerusalem.

II: The World of the Social Sciences: Current Studies and Research Centers (21 pages);
Reviews of Documents and Books (31 pages); News and Announcements (4 pages).

Annual subscription \$6.50

This issue \$2.00

Order from:

UNESCO PUBLICATIONS CENTER
801 Third Avenue, New York 22, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

CANADIAN JOURNAL OF ECONOMICS AND POLITICAL SCIENCE

Volume XXVIII, Number 4

November, 1962

Canada: Two Nations or One?	<i>Eugene Forsey</i>
The Economics of Stunted Growth	<i>Roger Dehem</i>
The Politics of Combines Policy: Liberals and the Stevens Commission	<i>D. F. Forster</i>
The Inflow of Long-Term Capital and the Canadian Business Cycle, 1950-1960	<i>Rudolph G. Penner</i>
An Ombudsman Scheme for Canada	<i>Donald C. Rowat</i>
The Denominational Basis of Representation in the Newfoundland Assembly, 1919-1962	<i>Gordon C. Rothney</i>
Democracy as Perceived by Public Opinion Analysts	<i>Léon Dion</i>

Notes and Memoranda

Aggregate Supply and Demand: An Explanation of Chapter III of the <i>General Theory</i>	<i>Paul Wells</i>
---	-------------------

Current Topics

Review Article

Regulation, Competition, and Rationality for Canadian Transportation	<i>John R. Meyer</i>
--	----------------------

Reviews of Books

\$6.00 per year. \$1.50 per single issue

UNIVERSITY OF TORONTO PRESS

Front Campus, University of Toronto, Toronto 5, Canada

THE ASIAN ECONOMIC REVIEW

(Quarterly Journal of the Indian Institute of Economics)

EDITOR: PROF. S. V. AYYAR

VOLUME V

NOVEMBER 1962

NUMBER 1

I. ARTICLES

Export Promotion and Economic Development in India	<i>G. V. Ramakrishna</i>
Balanced Economic Growth	<i>K. R. Gupta</i>
Finances of Andhra Districts between 1932-33 and 1953-54	<i>M. L. Kantha Rao</i>
The Role of Extension Education in Economic Growth in an Under-Developed Economy with Special Reference to the Community Development Movement in India	<i>R. S. Mani</i>
Indo-Pakistan Trade	<i>K. Anantaram</i>

II. BOOK REVIEWS

III. NOTES AND MEMORANDA

Per Copy—Rs.5/—

U.S. \$1.50—10 sh. Sterling.

Annual Subscription: Rs.20/—

U.S. \$5.00—30 sh. Sterling.

REGISTRAR

THE INDIAN INSTITUTE OF ECONOMICS

HYDERABAD (A.P.) INDIA

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

ECONOMETRICA

Journal of the Econometric Society

Volume 30, No. 3

July, 1962

CONTENTS

The Demand for Capital Goods by Manufacturers: A Study of Quarterly Time Series	Frank de Leeuw
Equilibrium in a Reinsurance Market	Karl Borch
Utility Theory without the Completeness Axiom	Robert J. Aumann
A Theorem on Non-Tatonnement Stability	Frank H. Hahn and Takashi Negishi
Bayesian Inference and Axioms of Consistent Decision	J. Wolfowitz
The Exact Sampling Distributions of Least Squares and Maximum Likelihood Estimators of the Marginal Propensity to Consume	A. R. Bergstrom
Notes on Estimated Aggregate Quarterly Consumption Functions	Z. Griliches, G. S. Maddala, R. Lucas, and N. Wallace
Wages, Capital Costs, and Employment in Manufacturing: A Model Applied to 1947-58 U. S. Data	Ronald I. McKinnon
An Investigation of the Dynamic Stability and Stationary States of the United States Potato Market, 1930-1958	P. Zusman
Farmers' Budgets in a Depression Period	A. P. Barten, H. Theil, and C. T. Leenders
The Place of Least Squares in Econometrics: Comment	Franklin M. Fisher
Further Comment	Frederick V. Waugh
Efficient Capital Accumulation: A Corrigendum	E. Malinvaud
Report of the New York Meeting	
Book Reviews:	
Announcements and Notes	
Errata	

Published Quarterly

Subscription rate available on request

The Econometric Society is an international society for the advancement of economic theory in its relation to statistics and mathematics.

Subscriptions to *ECONOMETRICA* and inquiries about the work of the Society and the procedure in applying for membership should be addressed to Richard Ruggles, Secretary, The Econometric Society, Yale University, Box 1264, New Haven, Connecticut, U.S.A.

MONOGRAPH

Series of

The American Academy of Political and Social Science

Publishers since 1890 of *THE ANNALS*

Presents a study of the political science discipline through recurring patterns in the behavior of individuals and groups involved in government and politics.

The Limits of Behavioralism in Political Science

Edited by James C. Charlesworth, Professor of Political Science, University of Pennsylvania and President, The American Academy of Political and Social Science

with papers by

David Easton
Heinz Eulau

Russell Kirk
Mulford Q. Sibley

Richard C. Snyder

First in the current series, these five papers discuss the interrelationship between behaviorism or "behavioralism" and political science. "Behavioralism," as distinguished from "behaviorism," is a word that cannot be defined in a sentence; but, whatever it is, it has generated a great deal of wonderment, controversy, missionary zeal, and scorn in many segments of the confraternity of political scientists.

The Academy is proud to assemble this distinguished panel of contributors to an elucidation of this current and controversial topic.

\$1.75

3937 Chestnut St., Philadelphia 4, Pa.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

INDUSTRIAL RELATIONS

A Journal of Economy & Society

Vol. 2

February 1963

No. 2

Symposium—THE WELFARE STATE IN THE 1960's

- Problems of the Welfare State: The Swedish Experience *Gösta Rehn and Erik Lundberg*
The Beveridge Report: 20 Years After *Eveline M. Burns*
U. S. Welfare Policies in Perspective *Margaret S. Gordon*

Articles

- Prosperity and Industrial Relations in Western Europe:
The Case of Great Britain *Arthur M. Ross*
Cultural Patterns in the Role of the Executive *Mason Haire, Edwin W. Ghiselli and Lyman Porter*
Tripartism in Minnesota *Joseph Lazar*

Criticism and Comment

- The Union Member's "Bill of Rights": First Two Years ... *Monroe H. Freedman*
Reply to Professor Freedman *Benjamin Aaron*

Published three times a year. Single issues: \$1.50; \$4.50 a year;
\$10 for three years. Make checks payable to the Regents of the University
of California.

INSTITUTE OF INDUSTRIAL RELATIONS

University of California

Berkeley, California

INTERNATIONAL ECONOMIC PAPERS

No. 11

Translations prepared for the International Economic Association

CONTENTS

- On Tolls and Transport Charges
Annales des Ponts et Chaussées, 1849 *Jules Dupuit*
The Exchange Ratio of Goods
Grundriss der Volkswirtschaftslehre, 1863 *Hans Karl Emil von Mangoldt*
The Determination of the Rational Wage Rate
Nationaløkonomisk Tidsskrift, 1873 *F. Bing and J. Petersen*
The Comparative Fiscal Burden of Public Debt and Taxation
Rivista di diritto finanziario e scienza delle finanze, 1950 *Federico Maffezzoni*
Production Functions, Technical Progress and Economic Growth
Einkommensverteilung und Technischer Fortschritt, 1959 *Alfred E. Ott*
The Demand for Money
Jahrbücher für Nationalökonomie und Statistik, 1960 *Friedrich A. Lutz*
Household Budget Investigations of Savings
Nationaløkonomisk Tidsskrift, 1960 *Erling Jørgensen*
Foreign Trade and Economic Growth: The Marginal Aspect
Ekonomisk Tidsskrift, 1961 *Bo Södersten*

London

Macmillan & Co. Ltd.

1962

New York

The Macmillan Company

A special price of \$3.80 net, plus 12 cents postage, has been arranged in co-operation with The Macmillan Company for members of the American Economic Association. Purchases at the special rate may be made by placing an order with Dr. Harold F. Williamson, Secretary, American Economic Association, Northwestern University. A covering check, made out to the Macmillan Company, must accompany the order.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Scottish Journal of Political Economy

(The Journal of the Scottish Economic Society)

Vol. IX

November 1962

No. 3

Growth, Investment and Efficiency in Britain: Some Policy Suggestions	<i>L. Needleman</i>
What Price the History of Economic Thought?	<i>D. N. Winch</i>
Mr. Winch's Article: A Comment	<i>H. Hamilton</i>
The Concept of "Fringe Benefits"	<i>G. L. Reid</i>
Shipbuilding at Dundee down to 1914	<i>S. G. E. Lythe</i>
Prices and Production in Scottish Farming 1850-1870	<i>Edith H. Whetham</i>
Credit Control and Asset Structure	<i>L. O. Wright</i>

Books Received.

The *Scottish Journal of Political Economy* is published in February, June, and October, and is free to members of the Scottish Economic Society. Applications for membership should be made to the Treasurer, Scottish Economic Society, 142 St. Vincent Street, Glasgow C.2., enclosing the annual subscription of £15:0. The *Journal* may also be obtained by non-members of the Society by ordering through any bookseller or direct from the publisher Oliver & Boyd, Tweeddale Court, Edinburgh, price 10/- per single copy.

THE ECONOMIC RECORD

The Journal of the Economic Society of Australia and New Zealand
Published Three Times a Year

Vol. 38

September 1962

No. 83

J. O. N. PERKINS: The Australian Economy, August 1962.

Articles

- R. I. DOWNING: Reforming the Australian Tax System.
- A. J. LITTLE: Some Aspects of Government Policy Affecting the Rural Sector of the Australian Economy, 1939/45-1953.
- H. W. ARNDT: Radcliffe Monetary Theory: A Comment
- B. T. APPLEYARD: Determinants of Return Migration—A Socio-Economic Study of United Kingdom Migrants who Returned from Australia.
- MURRAY C. KEMP: Errors of Measurement and Bias in Estimates of Import Demand Parameters.
- A. A. POWELL & K. O. CAMPBELL: Revenue Implications of a Buffer-Stock Scheme with an Uncertain Demand Schedule.

Notes

- S. J. BUTLIN: Frederic Benham: 1900-62
- G. C. HARCOURT: Productivity and Technical Change (Review)

News and Notes

Reviews

Published four times a year.

Annual Subscription £2. 2. 0

Single Copies 14/-

MELBOURNE UNIVERSITY PRESS

Registered in Australia for transmission by post as a periodical.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE QUARTERLY JOURNAL OF ECONOMICS

Founded 1886

Vol. LXXVI

November 1962

No. 4

Development Policies for Southern Italy	<i>Hollis B. Chenery</i>
The New View of Investment: A Neoclassical Analysis	<i>Edmund S. Phelps</i>
Agricultural Aid and Economic Development: The Case of Israel	<i>Alfred E. Kahn</i>
Short-Run Efficiency and the Organization of the Electric Power Industry	<i>William R. Hughes</i>
The Restoration of Pure Monopoly and the Concept of the Industry	<i>Mancur Olson and David McFarland</i>
Style Change Costs as a Market Weapon	<i>John A. Menge</i>
The Stationary State and the Technological Superiority of Present Goods	<i>Robert E. Kuenne</i>
Schumpeter's Theory of Economic Development and Underdeveloped Countries ..	<i>Prem Singh Laumas</i>
Notes and Discussions	
Backward-Sloping Labor Supply Functions in Dual Economies—The Africa Case	
Comment	<i>Peter F. M. McLoughlin</i>
Reply	<i>Elliot J. Berg</i>
On "The Methodology of Positive Economics"	
Comment	<i>Robert Piron</i>
Reply	<i>Eugene Rotwein</i>
Recent Publications	

Edited by Arthur Smithies for the
Department of Economics, Harvard University

\$1.75 per copy; \$6.00 a year; 3 years \$17.00
Special Student Rate, \$3.00 a year

Order from THE HARVARD UNIVERSITY PRESS
CAMBRIDGE 38, MASSACHUSETTS

THE JOURNAL OF FINANCE

Published by THE AMERICAN FINANCE ASSOCIATION

Vol. XVII

December 1962

No. 4

ARTICLES

Yields on New Underwritten Corporate Bonds, 1935-1958	<i>Avery B. Cohan</i>
Types of Money Used in the 1950's	<i>Dick Netzer and Abner D. Goldstine</i>
Optimum Rate on Time Deposits	<i>Paul F. Smith</i>
A Method for Consumer Valuation of Life Insurance Policies by Type ...	<i>Harry J. Solberg</i>

COMMUNICATIONS

COMPENSATORY CYCLICAL BANK ASSET ADJUSTMENTS

Comment	<i>H. Peter Gray</i>
Comment	<i>Stanley C. Silverberg</i>
Reply	<i>Dudley G. Luckett</i>

ABSTRACTS OF DOCTORAL DISSERTATIONS

BOOK REVIEWS

Membership dues are \$5.00 annually. Student subscription is \$2.00 a year. Libraries may subscribe to *The Journal* at \$5.00 annually. Correspondence with regard to applications for membership in the American Finance Association and subscriptions to *The Journal of Finance* should be addressed to the Secretary-Treasurer, Robert A. Kavesh, Graduate School of Business Administration, New York University, 100 Trinity Place, New York 6, New York.

Communications relating to the contents of *The Journal of Finance* should be addressed to the Editor, Harold G. Fraine, Commerce Building, University of Wisconsin, Madison 6, Wisconsin, or to any of the Associate Editors: William W. Alberts, Graduate School of Business, University of Chicago, Chicago 37, Illinois; Clyde W. Phelps, Department of Economics, University of Southern California, Los Angeles 7, California; and Lawrence S. Ritter, Graduate School of Business Administration, New York University, New York 6, New York.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION

810 18th St., N.W., Washington 6, D.C.

Volume 57

December 1962

Number 300

TABLE OF CONTENTS

The Interpolation of Time Series by Related Series	Milton Friedman
Integral of the Bivariate Normal Distribution Over an Offset Circle ..	Dennis O. GÜlliland
A Sequential Test of the Equality of Probabilities in a Multinomial Distribution ..	Lionel Weiss
Some Two-sided Distribution-free Tolerance Intervals of a General Nature	John E. Walsh
A Multi-stage Procedure for the Selection of the Best of Several Populations	R. J. Taylor and Herbert A. David
Changes in Concentration of Domestic Manufacturing Establishment Output: 1939-1958	Henry Einhorn
A Similarity Between Goodman and Kruskal's Tau and Kendall's Tau, with a Partial Interpretation of the Latter	Robert H. Somers
Constants and Compromise in the Consumer Price Index	Abner Hurwitz
The Concept of Capacity	Frank de Leeuw
Evaluation of Census Survival Rates in Estimating Intercensal State Net Migration	James D. Tarver
The Ratio Bias in Surveys	Leslie Kish, N. Krishnan Nambodiri and R. Krishna Pillai
Asymptotic Power of Tests of Linear Hypotheses Using the Profit and Logit Transformations	James E. Grizzle
Current Weight-Height Relationships of Youths of Military Age ..	Bernard D. Karpinos
The Reciprocal of the Decapitated Negative Binomial Variable ..	Zakkula Govindarajulu
Book Reviews	

ASA

THE AMERICAN STATISTICAL ASSOCIATION

INVITES AS MEMBERS ALL PERSONS INTERESTED IN:

1. Development of new theory and method
2. Improvement of basic statistical data
3. Application of statistical methods to practical problems

THE JOURNAL OF INDUSTRIAL ECONOMICS

Board of Editors: P. W. S. Andrews (General Editor), Nuffield College, University of Oxford; Professor M. A. Adelman, Massachusetts Institute of Technology; Professor Joel Dean, Columbia University; Professor P. Sargant Florence, C.B.E., University of Birmingham; Professor R. B. Heflebower, Northwestern University; Professor E. S. Mason, Harvard University; Professor T. Wilson, O.B.E., University of Glasgow.

Volume XI, No. 1, November, 1962

Pierre Masse	French Methods of Planning.
A. J. Burkart	Advertising and Marketing in the Airline Industry.
Lawrence B. Krause	Import Discipline: The Case of the United States Steel Industry.
B. L. Johns	Barriers to Entry in a Dynamic Setting.
E. W. Talbot	Postmortem on a Ten-year Forecast: Relating Product Demand to Industrial Production Trends.
P. W. S. Andrews and Elizabeth Brunner	Business Profits and the Quiet Life.

This Anglo-American journal is essentially devoted to the economic problems of industry and commerce. Its contributors are business men, economists engaged in industry, and specialist academic industrial economists. The Journal is published three times a year. MSS from the United States should be sent to Professor Adelman at the Massachusetts Institute of Technology; and from other countries to the General Editor, Nuffield College, Oxford. The annual subscription is \$4.20 (30 shillings) post free; single copies \$1.90 (thirteen shillings and sixpence) post free. Remittances should be sent to the publisher by personal cheque.

Published by
BASIL BLACKWELL • OXFORD, ENGLAND

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE INDIAN ECONOMIC JOURNAL

Vol. X

October 1962

No. 2

I Articles

- Factor Proportions and the Structure of Indo-U.S. Trade*R. Bharadwaj*
 A Critical Exposition of Menger's Theory of Value*M. A. Raz*
 Notes on Some Aspects of Transportation Planning*Krishna Bharadwaj*
 On Some Indices for Measuring "Localization" and Estimating its Effect
 on "Productivity"*G. P. Mukerji*
 International Trade in Primary Commodities—A Factual Note ..*M. L. Dantwala*

II. Reviews

III. Notes

All Communications should be sent to

**The Editor, The Indian Economic Journal,
 Department of Economics, University of Bombay
 Bombay 1.**

Per copy: Rs. 5/- or 7/6 d
 or \$1.25 post free

Per annum: Rs. 15-
 or £1-5-0 or \$4.00 post free

PUBLIC FINANCE/FINANCES PUBLIQUES

International Quarterly Journal founded by J. A. Monod de Froideville
 Publisher/Editeur

Foundation Journal Public Finance/Fondation Revue Finances Publiques
 (Stichting Tijdschrift voor Openbare Financiën)

Vol. XVII

1962

No. 3

- | | |
|---------------------------------------|--|
| C. Alves Martins | Fiscal Policy and Changes in National Income—An Approach |
| Mirosław Orłowski | Financial Studies in the Polish People's Republic |
| Alan T. Peacock and
Douglas Dosser | Stabilization and Economic Planning in African Countries |

Book Reviews/Comptes Rendus

Contributions in French or German are followed by an English summary.

Committee of Directors: M. Masoin, Alan T. Peacock, B. Schendstok, P. Senf.

Correspondence should be addressed to Prof. Dr. P. Senf, Universität des Saarlandes, Saarbrücken 15, Germany. Orders may be placed with the representative in the United States, Stechert Hafner Inc., 31 East 10th Street, New York, or directly with the Administration, 122 Gradaland, The Hague, Netherlands. Subscription rate for 1 year: \$10.90.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Important titles from Rand McNally

Forthcoming . . .

Statistics: An Introduction to Quantitative Economic Research

DANIEL B. SUITS • University of Michigan

Written for the beginning course in economic or business statistics, this new text leads the student to an effective and insightful use of statistics as a research tool. The author's fresh approach and coherent organization provide the student with a better understanding of economic reality.

1963

c. 200 pages

c. \$5.95

Money, Banking & Public Policy

HAROLD BARGER • Columbia University

In less than one year after publication, this entirely new text has been selected by over 100 universities and colleges for the money and banking course. The author has provided the student with a more balanced, integrated, and thought-provoking treatment than any previous text.

1962

714 pages

\$7.00

Now in paperback . . .

Giant Among Nations

Problems in United States Foreign Economic Policy

PETER B. KENEN • Columbia University

This penetrating treatment of United States foreign economic policy is now available in paperback—priced well within the reach of every student. Ideally suited for courses in international trade and principles of economics.

1963

232 pages

\$1.75



To order your copies, write:

College Department

RAND McNALLY & COMPANY

P. O. Box 7600, Chicago 80, Illinois

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



ECONOMIC CENSUS STUDIES

This series of monographs is based mainly on the economics censuses of 1954 and subsequent years, and is prepared under the auspices of the Committee on Analysis of Economic Census Data, which was appointed by the Social Science Research Council in 1956. The committee is principally concerned with stimulating more informed use, in economic analysis, of the large body of economic data collected by the Bureau of Census. As a part of its regular activities the Bureau gathers a vast amount of data, only some of which are generally available in published form. When properly analyzed, these data can shed a great deal of light on the structure and functioning of the United States economy.

Changes in the Location of Manufacturing in the United States Since 1929

by Victor R. Fuchs

Since 1929 there has been a significant shift in the location of manufacturing in the United States which has had and will continue to have a profound effect on the nation's economic, political, and social life. In this first volume of the Economic Census Studies, the author presents a comprehensive description and analysis of these changes. Mr. Fuchs investigates the determinants of manufacturing growth by state and region, considering the relation between growth of manufacturing and wage rates, extent of unionization, climate, and other location factors.

\$10.00

Planning for Freedom

by Eugene V. Rostow

The Dean of the Yale Law School appraises the legal system for governing and directing the economy of the United States as a means through which we seek the goals of personal social freedom under law. "Meaty, clear, thoughtful, and filled with obiter dicta on, among other matters, education, foreign policy, our farm and transportation problems."—*American Economic Review*.

cloth \$6.00

paper \$1.95

Yale University Press: New Haven and London

Canadian orders: McGill University Press, Montreal 25

PUBLIC ENTERPRISE ECONOMICS AND TRANSPORT PROBLEMS

By Tillo E. Kuhn. The methods of private enterprise and economic efficiency can be used in the public services, which are assuming an increasing responsibility for carrying out functions unsuitable to private enterprise. \$5.00

LABOR IN DEVELOPING ECONOMIES

Edited by Walter Galenson. This book is an analysis of the growth of labor institutions, practices, and problems in seven countries undergoing economic development. The material is presented by five Americans who have firsthand knowledge of the areas about which they write. \$6.00

COMPETITION, REGULATION, AND THE PUBLIC INTEREST IN NONLIFE INSURANCE

By Roy J. Hensley. This book analyzes important aspects of the market characteristics and economic results of nonlife insurance, and recommends changes in these market conditions which might lead to a better performance in the public interest. \$6.50

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY 4

As one of the world's leading industrial research and consulting organizations we provide industrial development services, including the evaluation of projects for their technical and commercial soundness, identification of new opportunities for potential investors, and advisory services to local governments on industrial development policy. We currently have openings for the following specialists:

INDUSTRIAL ECONOMISTS

Graduate degree in economics; knowledge of wide variety of industries; experience in underdeveloped countries; ability to analyze industrial projects for financial structure, market prospects, earnings prospects, value to national economy.

Some of these positions involve residence in underdeveloped countries for periods of up to two years with substantial additional benefits.

Please reply by letter to:

Mr. John A. Devereux in Cambridge, Massachusetts,
enclosing your resume if possible.

Arthur D. Little, Inc.

**20 Acorn Park
Cambridge, Massachusetts**

"An equal opportunity employer"

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Princeton

UNIVERSITY
PRESS

The National Wealth of the United States in the Postwar Period

By Raymond W. Goldsmith

This report contains the only comprehensive, detailed estimates of U. S. national wealth and its components since World War II, showing that our national wealth nearly tripled between 1945 and 1958. The figures expand the author's 1900-1945 estimates, published in his *A Study of Saving in the United States, Vol. III*. This present book also investigates the structure of our national wealth, how it has changed during the postwar period, and how it compares with that of other countries for which similar estimates exist. *Published for the National Bureau of Economic Research.*

448 pages. Tables & charts. \$12.50

Diversification & Integration in American Industry

By Michael Gort

A study which provides the first comprehensive view of the inter-industry structure of the large diversified enterprise, using unpublished tabulations of the Bureau of the Census. While only a small proportion of companies in the United States are active in more than one industry, those that are diversified constitute an important part of the economy and their activities outside their own industry are large in the aggregate. *Published for the National Bureau of Economic Research.*

275 pages. Tables & charts. \$5.00

The Flow-of-Funds Approach to Social Accounting:

Appraisals, Analysis and Applications

Conference on Research in Income and Wealth, 26

Part I of this volume contains papers dealing with the integration of the flow-of-funds accounts with other social accounting systems. Part II relates to the analytic uses and applications of flow-of-funds data in economics, finance, business, and government. Discussions of sources of information such as financial institutions, unincorporated businesses, and consumers, are included in Part III. *Published for the National Bureau of Economic Research.*

500 pages. Tables & charts. \$10.00



Order from your bookstore, or

PRINCETON UNIVERSITY PRESS • Princeton, N.J.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Risk and Insurance

by
James L. Athearn
of the
**University of
Florida**

Written in clear, nontechnical language, this new book applies the modern concept of risk to teaching the principles of insurance. Showing the risk first, the author discusses the insurance to cope with it from the point of view of the buyer of insurance, the risk manager. Throughout the book, Professor Athearn explains the nature of insurance from a broad economic standpoint rather than from the restricted view of the insurance industry alone.

526 pages, illus. \$6.95

"Professor Athearn in using the approach of risk management has written one of the best introductory texts." **Dean Edmund A. Smith**, University of Portland, Oregon.



APPLETON-CENTURY-CROFTS
34 West 33rd Street, New York 1, N. Y.

Division of Meredith Publishing Company

U.S. PRIVATE AND GOVERNMENT INVESTMENT ABROAD

Edited by **Raymond F. Mikesell**

The Over-All Record: Past and Present

International Capital Movements in Historical Perspective, by DOUGLAS C. NORTH, Director of the Institute for Economic Research, University of Washington . . . *U. S. Postwar Investment Abroad: A Statistical Analysis*, by RAYMOND F. MIKESELL, W. E. Miner Professor of Economics, University of Oregon.

Direct Private Foreign Investment: Nature, Effects, and Methods of Promotion

By JACK N. BEHRMAN, Assistant Secretary for International Affairs, U. S. Department of Commerce.

Foreign Associates and Their Financing . . . Foreign Investment and the Transfer of Knowledge and Skills . . . Economic Effects of Private Direct Investment . . . Promotion of Private Overseas Investment . . . U. S. Government Encouragement of Private Direct Investment Abroad.

Private Portfolio Investment

Postwar Growth of Private Portfolio Investment, by RAYMOND F. MIKESELL . . . *United States Investment in Foreign Securities*, by PAUL MEEK, Public Information Department, Federal Reserve Bank of New York.

U. S. Government Investment Abroad

By RAYMOND F. MIKESELL

Classification and Functional Analysis of Public Foreign Investment . . . Problems and Policies in Public Lending for Economic Development . . . Capital Absorptive Capacity as a Limitation on Lending for Economic Development . . . The Capacity to Service Foreign Investment.

Special Problems

Postwar U. S. Foreign Petroleum Investment, by A. GEORGE GOLS, Economist, Arthur D. Little Company . . . *The Export-Import Bank of Washington*, by RAYMOND F. MIKESELL . . . *Economic Analysis of Attitudes of Host Countries toward Direct Private Investment*, by DONALD A. WELLS, Assistant Professor of Economics, Southern Illinois University . . . *Foreign Investment and the National Economic Advantage: A Theoretical Analysis*, by PAUL B. SIMPSON, Professor of Economics, University of Oregon.

Conclusions for Public Policy

By RAYMOND F. MIKESELL

UNIVERSITY OF OREGON BOOKS
EUGENE, OREGON

xiv, 599 pages. Price: \$10.00

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

TWO TIMELY TITLES

INTERNATIONAL TRADE

THEORY-POLICY-PRACTICE

By Kramer, d'Arlin, and Root

Here is a noteworthy contribution to the instructional literature for the courses in international trade and international economics. It is written by three authorities who are adequately qualified to deal with international economic theory, international economic policy, and the practical problems of the international trading firm.

The emphasis is on the international role of the United States since World War II and its efforts to create a world trading system of free exchange and low trade barriers. Attention is also pointed to other international developments such as the European Economic Community. A summary of important points is given at the end of each chapter.

678 pages

\$7.95

INTERNATIONAL MARKETING

By Roland L. Kramer

This dual-purpose book is designed for use in the marketing department and also in the foreign trade department. Basic principles of marketing are discussed in a manner that provides a clear contrast between domestic marketing and foreign marketing. Practical examples and applications are used to give the student a grasp of the framework in which marketing on a world-wide basis operates.

Each chapter concludes with a concise summary of outstanding points and principles. The end-of-chapter problems present practical situations involving investigation, research, and outside study.

658 pages

\$7.95

SOUTH-WESTERN PUBLISHING CO.

(Specialists in Business and Economic Education)

Cincinnati 27 New Rochelle, N.Y. Chicago 44 Burlingame, Calif. Dallas 2

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

WORKABLE COMPETITION AND ANTITRUST POLICY

By George W. Stocking

vii + 451 pages

\$7.50

"Dr. Stocking is a scholar whose reading of both legal and economic sources is comprehensive and acute."

*Peter O. Steiner, University of Wisconsin
in The American Economic Review*

THE FERTILIZER INDUSTRY

By Jesse W. Markham

249 pages

\$6.00

A study of workable competition in a poorly functioning market.

VANDERBILT UNIVERSITY PRESS
NASHVILLE 5, TENNESSEE

TO RESTORE AND IMPROVE

*the standards of higher education
in America*

THE UNIVERSITY BOOKMAN

A Quarterly Review edited by

RUSSELL KIRK

- ★ **REVIEWS** . . . of university and college textbooks
- ★ **ESSAYS** . . . on educational theory and practice
- ★ **CONTRIBUTORS** . . . include such sound scholars and competent writers as Gerhart Niemeyer, Thomas Molnar, Ernest Van Den Haag, Felix Wittmer, John Abbot Clark, John A. Lukacs, George C. S. Benson, Arther S. Trace Jr.
- ★ **IT COSTS** \$2.00 (4 issues)

The University Bookman should be read by everyone interested in significant criticism and evaluation of American education.

SUBSCRIBE NOW! Write today to:

THE UNIVERSITY BOOKMAN

Box 3070
Grand Central Station
New York N. Y.

Dept. 8,

Prentice-Hall's

International Series in Management

Administrative Organization

by JOHN M. PFIFFNER and FRANK P. SHERWOOD of the
University of Southern California.

1960

481 pages

Text price: \$7.95

Business Simulation

In Industrial and University Education

by PAUL S. GREENLAW, The Pennsylvania State University,
LOWELL W. HERRON and RICHARD H. RAWDON, both at
Clarkson College of Technology.

1962

356 pages

Text price: \$7.50

Economic Technique and Industrial Management, 2nd

by JACQUES LESOURNE, Lecturer of Political Economy,
l'Ecole des Mines de Saint-Etienne, France.

1962

Price to be announced

Economic Theory and Operations Analysis

by WILLIAM J. BAUMOL, Princeton University.

1961

438 pages

Text price: \$7.50

Executive Decisions and Operations Research

by MARTIN K. STARR and DAVID W. MILLER, both at
Columbia University.

1960

448 pages

Text price: \$7.95

Methods and Models of Operations Research

by A. KAUFMANN, Scientific Advisor, Institut Polytechnique de
Grenoble, France.

1962

Price to be announced

Optimal Investment Decisions:

Rules for Action and Criteria for Choice

by PIERRE MASSÉ, General Commissioner of Equipment and
Productivity Planning for France.

1962

Approx. 516 pages

Text price: \$9.75

Planning Production, Inventories and Work Force

by CHARLES C. HOLT, University of Wisconsin, JOHN F.
MUTH, Carnegie Institute of Technology, FRANCO MODIG-
LIANI, Massachusetts Institute of Technology, and HERBERT A.
SIMON, Carnegie Institute of Technology.

1960

433 pages

Text price: \$7.95

Prediction and Optimal Decision:

Philosophical Issues of a Science of Values

by C. WEST CHURCHMAN, University of California, Berkeley.

1961


394 pages

Text price: \$7.50

Write for approval copies

PRENTICE-HALL, INC.

BOX 903 — ENGLEWOOD CLIFFS — NEW JERSEY

from RANDOM  HOUSE

.....

The Experience of Economic Growth

by BARRY SUPPLE, *McGill University*

This outstanding collection of essays introduces the student to the history of economic growth as shown by the industrialized countries of the world. The book, divided into five sections, gives representative views of numerous well-known scholars in the field. In an explicit and detailed introductory essay, Professor Supple draws these divergent views together as he discusses the broad features of economic growth both in theory and in history.

Spring 1963

Business Fluctuation, Growth, and Stabilization

by JOHN J. CLARK, *St. John's University*
and MORRIS COHEN, *Associate Editor, Fortune Magazine*

A superb anthology of articles and excerpts from the best of classical and contemporary professional literature. The main challenge to private enterprise, according to the editors, is to contain business fluctuation within reasonable limits without destroying the incentives which stimulate economic growth. This examination of the evolution of economic theory since the middle of the nineteenth century provides an orderly appraisal in depth of our economic structure in the face of serious Soviet rivalry.

Spring 1963

Trade Unions in the Age of Affluence

by WILLIAM H. MIERNYK, *University of Colorado*

This is the first book in the Random House Studies in Economics, a series of original works attractively bound in paper covers.

January 1963

.....

RANDOM HOUSE • The College Department • 501 Madison Avenue • New York 22

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Outstanding Textbooks in the Rand McNally Economics Series

Recently published

MONEY, BANKING & PUBLIC POLICY

By HAROLD BARGER, Columbia University

1962
714 pages
\$7.00 list

A new, up-to-date presentation of contemporary banking. The author's fresh approach includes such timely additions as: discussion of banking in other countries, monetary aspects of the business cycle, a systematic discussion of major policy issues of our times, and a lucid description of bank and non-bank financial institutions—the way they operate, and policy problems connected with their regulation.

A widely commended source

READINGS ON THE SOVIET ECONOMY

By FRANKLYN D. HOLZMAN, Tufts University

1962
763 pages
\$5.95 list

A collection of 41 of the best essays published on the Soviet economy in the past twenty years. The book treats the Soviet system in ten major areas, including articles on theory, statistics, and descriptions of institutions. In almost every section there are articles that compare the Soviet progress with that of the United States and other Western nations.

New, penetrating treatment

NATIONAL INCOME AND ECONOMIC GROWTH

By KENNETH K. KURIHARA, Rutgers University

1961
176 pages
\$4.25 list

A well-written book that presents a more comprehensive treatment of economic growth than the prevailing national income texts. The author integrates a useful review of the essentials of national income accounting with a clear, yet vigorous treatment of income and employment theory and an operationally significant introduction to the growth theory. Written for courses in macroeconomic theory.



WRITE: COLLEGE DEPARTMENT
P.O. BOX 7600, CHICAGO 80, ILLINOIS

Rand McNally & Company

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Brookings Titles —Forthcoming and Recent

Federal Fiscal Policy in the Postwar Recessions, by Wilfred Lewis. Describes, measures, and evaluates both automatic and discretionary responses to changes in economic activity. The first in the new series of Studies of Government Finance. About 400 pages. (November) Cloth, \$6.75. College Edition, paper \$2.50

India's Quiet Crisis: Economic Development and American Policy, by John P. Lewis. The author, whose research included a year's stay in India, explains the importance of the Indian experiment both to India and the United States. Analyzes the importance of planning and of American aid. About 400 pages (November) \$5.75

• Just Published

Tax Credits and Intergovernmental Fiscal Relations, by James A. Maxwell. The possibilities of easing the financial burden on state and local governments and of coordinating federal and state-local revenue systems are explored in this study of tax credits, tax sharing, grants, and tax supplements. 202 pages \$3.75

Competition and Monopoly: Legal and Economic Issues, by Mark S. Massel. Examines the impact of the full range of government activities affecting competition—not just antitrust, but government purchasing, research, taxation and other policies as well. Points to the need for better understanding between economists and lawyers so that economic analysis can be more effectively used. 477 pages \$6.75

• Other Recent Titles

Wage Policy and Long-Term Contracts, by Joseph W. Garbarino Paper \$2.00

Development of the Emerging Countries: An Agenda for Research, by Robert E. Asher, Everett E. Hagen, Albert O. Hirschman, Gerhard Colm, Theodore Geiger, Arthur T. Mosher, R. S. Eckaus, Mary Jean Bowman, C. Arnold Anderson and Howard Wiggins Paper \$2.75

Competition as a Dynamic Process, by John Maurice Clark \$7.50

The Role of the Federal Government in Financing Higher Education, by Alice M. Rivlin Paper \$2.00

Doctors, Patients & Health Insurance, by Herman M. and Anne R. Somers \$7.50

Import Liberalization and Employment: The Effects of Unilateral Reductions in U.S. Trade Barriers, by Walter S. Salant and Beatrice N. Vaccara \$6.75

Growth and Stability of the Postwar Economy, by Bert G. Hickman \$6.00

THE **Brookings**
Institution

1775 Massachusetts Avenue, N. W., Washington 6, D. C.

Please mention *THE AMERICAN ECONOMIC REVIEW* When Writing to Advertisers

PRINCIPLES OF ECONOMICS

C. E. Ferguson and Juanita M. Kreps,
both of Duke University

Aware of recent concern over economic growth and inflation, Professors Ferguson and Kreps have shifted the usual textbook emphasis to these problems. Their book is organized around the three currently dominant national objectives; (1) a relatively stable price level, (2) full and stable employment, (3) continued growth of per capita output. This clearly written book, with over 150 color illustrations, is planned for a one-year introductory course. 1962, 864 pp., \$7.95

NATIONAL INCOME:

ITS MEASUREMENT, DETERMINATION,
AND RELATION TO PUBLIC POLICY

Sam Rosen, University of New Hampshire

An upper-division and first year graduate text in macroeconomics and social accounting containing sections on income accounting, determination, and policy. Includes such relatively new devices as input-output, balanced budget multiplier, flow of funds, national balance sheets, and Phillips curve.

Jan. 1963, 384 pp., \$6.50 tentative

SOVIET UNION:

PARADOX AND CHANGE

Robert T. Holt and John E. Turner, both
of the University of Minnesota; et al.

This book neither condemns nor praises Russia, but rather tries to understand the quality of life in that changing country. City growth, economic changes, agricultural production, and technology are some of the areas studied by the authors who journeyed through Russia together and are experts on Soviet affairs.

Nov. 1962, 256 pp., \$4.50 tentative

HOLT, RINEHART AND WINSTON, INC.

383 Madison Avenue, New York 17

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

\$50,000,000,000



... or 1/10 of the national income, represents the sum of resources spent by our military establishment each year. The Department of Defense, viewed as a giant, multi-product, multi-location firm, exhibits resource allocation problems of great complexity and of a magnitude unparalleled in history.

The Institute for Defense Analyses is intimately concerned with the solution or alleviation of these problems, and with other matters important to the Secretary of Defense and the Joint Chiefs of Staff. In this work, a serious need exists for experienced economists to pool their talents and their points of view with those of IDA scientists, as colleagues in joint endeavors. IDA is a civilian, nonprofit corporation sponsored by eleven of the nation's great universities. At IDA you will enjoy a continuing intellectual challenge, a favorable research environment, and the gratification of doing work of national significance.

IDA is an equal opportunity employer. For further information, contact Mr. J. P. Rumberger, Director of Personnel

INSTITUTE FOR DEFENSE ANALYSES

1666 Connecticut Avenue, N.W., Washington 9, D. C.

California Institute of Technology : Case Institute of Technology : University of Chicago : Columbia University : University of Illinois : Massachusetts Institute of Technology : University of Michigan : Pennsylvania State University : Princeton University : Stanford University : Tulane University

Harvard Presents

UNITED EUROPE Challenge and Opportunity

By Walter Hallstein

Mr. Hallstein, President of the Commission of the European Economic Community, opens with a brief survey of existing European treaties concerning economic integration: Euratom, dealing with atomic energy; ECSC (European Coal and Steel Community); EEC (European Economic Community or "Common Market"). According to the author "... it is clear that the words 'economic union' are inadequate to describe the European Economic Community. We are witnessing a 'continual revolution' today, one in which the European Community has no small share." He ends his discussion with his predictions on the possible future of the Common Market. *The William E. Clayton Lectures, 1962.* \$2.75

ECONOMIC BACKWARDNESS IN HISTORICAL PERSPECTIVE

A Book of Essays

By Alexander Gerschenkron

Explaining and systematizing the elements of innovation in industrial history, Mr. Gerschenkron opens new paths of research and poses a number of questions concerning economic development in backward countries. His versatile analysis includes not only industrial output indices and historical hypotheses on the index number problem, but also insights from a study of Soviet novels and a brilliant critique of *Doctor Zhivago*. \$8.75

OLIGOPOLY AND TECHNICAL PROCESS

By Paolo Sylos-Labini

The author believes that mainly as a consequence of industrial concentration the modern structure of production in advanced countries differs significantly from that of the past century. In industrial markets concentrated and differentiated oligopoly has taken the place of quasi-competitive conditions. *Harvard Economic Studies.* \$4.75



Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Announcing . . .

Programmed Instruction in Economics

In 1961 the National Task Force on Economic Education said:

"We believe it is far more important for students to learn to think about economic situations objectively and rationalize for themselves than to learn masses of institutional details, or memorize lists of unused economic concepts. . . . What they study should be studied *analytically* and in reasonable depth rather than as superficial memory work."

Concurrent with the heightened appreciation of analysis in teaching economic concepts, psychologists have introduced *programmed instruction*, a new teaching technique that facilitates the analytical study of concepts.

With programmed instruction, sometimes called the "teaching machine" method, the student

- progresses in small steps arranged in a carefully planned sequence
- gets prompt confirmation or knowledge of results at each step
- proceeds at his own pace
- makes few discouraging errors

This procedure requires the student to take an active part in the step-by-step analysis of economic concepts. First, he identifies the critical variables in a description of economic behavior. Then he manipulates the variables to discover the relationship between them. Finally, he summarizes his discovery in a verbal or graphic statement of the principle.

* * *

In association with Irwin Herrnstadt of Northeastern University, ENTELEK has developed five programmed instructional supplements, each fully explaining a conceptual "stumbling block" in introductory economics:

- Supply and Demand
- National Income Accounting
- Theory of Income Determination
- The Business Firm
- Theory of Production

Each topic is treated in a separate volume. Each volume is in two sections. One section contains the programmed "dialogue," about 600 frames long, which guides the student through the analysis. The other section contains correlated tables and graphics.

The five programmed supplements can be used in conjunction with any introductory economics text or with a TV lecture series. A "key" supplied with the program correlates the supplements with specific texts and a current ETV series.

The program has been thoroughly tested with college freshmen and high school populations.

Write for approval copies.

Each supplement: 8½ x 11 inches, c. 130 pages \$2.00



ENTELEK INCORPORATED

42 Pleasant Street, Newburyport, Massachusetts

NEW BOOKS FROM WILEY & INTERSCIENCE . . .

*books and services for
businessmen . . .*

ORGANIZATION THEORY AND INDUSTRIAL PRACTICE

A SYMPOSIUM OF THE FOUNDATION FOR RESEARCH ON HUMAN BEHAVIOR

Edited by M. HAIRE, University of California, Berkeley. Representatives of industry present papers on organization-theory-in-action. 1962. 173 pages. \$5.75.

BASIC MATHEMATICS FOR ADMINISTRATION

By F. P. FOWLER, JR. and E. W. SANDBERG, both of Colorado State University. Provides fundamental tools to help cope with the increasingly complex problems of today's science of administration. 1962. 339 pages. \$7.95.

CASEBOOK IN PRODUCTION MANAGEMENT

By R. J. ZIEGLER, University of Illinois. Specifically designed to serve as a bridge between present methods of teaching production management and those which may ultimately emerge in the future. 1962. 150 pages. \$5.50 (hardbound). \$3.95 (paperbound).

AGING AND PERSONALITY

A STUDY OF EIGHTY-SEVEN OLDER MEN

By the late S. REICHARD, formerly of the University of California, Berkeley; F. LIVSON, University of California, Berkeley and P. G. PETERSEN, Solano County Mental Health Service, Fairfield, California. A report on the study directed by the late Else Frenkel-Brunswik. Examines the transition period from middle-age to old-age, as observed in a group of normal working men. 1962. 237 pages. \$7.95.

THE STATISTICAL METHOD IN BUSINESS

By F. A. EKEBLAD, Northwestern University. Deals with the statistical method in its applications to the problems of business. 1962. 789 pages. \$8.50.

QUALITY CONTROL AND APPLIED STATISTICS

AN ABSTRACT SERVICE FOR ALL BRANCHES OF INDUSTRY

Edited by R. S. TITCHEN, A. J. ROSENTHAL, B. BOLLERMAN and F. NISTICO. An Interscience Publication. Volume VII, 1962. Subscription price of this abstract is \$90.00 per year (12 issues).

OPERATIONS RESEARCH/MANAGEMENT SCIENCE

INTERNATIONAL LITERATURE DIGEST SERVICE. A MONTHLY SERVICE TO MANAGEMENT—BUSINESS, INDUSTRIAL, MILITARY.

Edited by R. S. TITCHEN and A. J. ROSENTHAL. An Interscience Publication. Volume II, 1962. Subscription price is \$75.00 per year (12 issues).

Send for your examination copies today.

JOHN WILEY & SONS, Inc.

440 Park Avenue South, New York 16, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

NOTICE

To MEMBERS and SUBSCRIBERS

INCREASE IN RATES

At the March 23-24, 1962, meeting of the Executive Committee of the Association, it was decided to adopt the following rate schedule, effective as of January 1, 1963:

Annual dues	\$ 8.00
Family membership	1.00
Junior (student) membership	4.00
Subscribing membership	10.00
Contributing membership	25.00 or more
Subscription to the <i>A. E. R.</i>	8.00

The members of the Executive Committee felt this action was necessary to enable the Association to continue present services to its members and to meet rising publishing costs of the *American Economic Review* and a new edition of the *Handbook*. It should be noted that membership dues and subscription rates have not been changed since 1950. The present schedule of rates is well below that of most other professional organizations.

HAROLD F. WILLIAMSON
Secretary

NEW from Prentice - Hall —

**Spectrum  Paperbacks to supplement
your Economics courses . . .**

S-AA-7 AUTOMATION AND TECHNOLOGICAL CHANGE

An American Assembly Book edited by John T. Dunlop, Harvard University.

Nine leading authorities consider the possibilities of advancing industrial technology: if oriented toward human values, it could mean a better age for mankind—or it could impose a mechanical jig on its creators. 192 pp. (orig.), 1962, paperback \$1.95, clothbound \$3.95.

S-44 THE AMERICAN LABOR MOVEMENT

edited by Leon Litwack, University of Wisconsin.

Reveals the American worker's struggle under the impact of the Industrial Revolution. Throws new light on topics of increasing concern. Retraces the turbulent course of the American labor movement through the give and take of editorials, periodicals and Congressional hearings. 192 pp. (orig.), October 1962, paperback \$1.95.

S-38 SOCIAL JUSTICE

edited by R. B. Brandt, Swarthmore College.

The concept of justice—as seen by the economist, philosopher, lawyer and political theorist. This is the first book-length treatment to use modern analytic concepts drawn from philosophy. 192 pp. (orig.), October 1962, paperback \$1.95, clothbound \$3.95.

S-23 REVOLUTION, EVOLUTION AND THE ECONOMIC ORDER

by Allen M. Sievers, University of Florida. Sharp contrast of views drawn from the works of Schumpeter, Gailbraith, Hansen, Clark, Keynes, and author Sievers. 192 pp. (orig.), 1962, paperback \$1.95, clothbound \$3.95.

S-11 WHAT PRICE ECONOMIC GROWTH?

edited by Klaus Knorr and William J. Baumol, both of Princeton University. 174 pp. (orig.), 1961, paperback \$1.95, clothbound \$3.95.

S-12 SCARCITY AND EVIL


by Vivian Charles Walsh, University of Buffalo. 128 pp. (orig.), 1961, paperback \$1.95, clothbound \$3.95.

S-AA-3 GOALS FOR AMERICANS

The Report of the President's Commission on National Goals, 372 pp. (orig.), 1960, paperback \$1.00.

For a complete Spectrum catalogue, write: Dept. CAC .

Available at your Bookstore

SPECTRUM  BOOKS: SYMBOL OF GOOD READING

PRENTICE-HALL, Inc., Englewood Cliffs, N. J.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

L'INDUSTRIA

Review of Political Economy

Editor: Ferdinando di Fenizio

Summary of Issue n. 2/1962

R. FRISCH	Economic Planning and the Growth Problem in Underdeveloped Countries
M. TALAMONA	Notes upon R. Frisch's Essay on Some Problems of Planning
R. STONE	A Demonstration Model for Economic Growth
A. G. PAPANDREOU	Explanation and Prevision in Economy
C. F. CARTER	An Experiment in Business Research
A. PREDETTI	Electronic Computer in Economic Research
f.d.f.	The Rise in Price Level Is to Be Controlled—Cycle Stabilization in Italy—The Institution of a Tax on Corporate Dividends—Comments Upon La Malfa's Speech—Business Conditions in the U.S.

Each number contains Summaries in English of the original articles—Annual subscription rate for Abroad: Lit. 6.000=.

Anyone interested may send for a sample copy.
Editorial and Administrative Offices: Via Farneti, 8—Milano (Italy)

INTERNATIONAL ECONOMIC REVIEW

Published by the Kansai Economic Federation with the Collaboration of the Wharton School of Finance and Commerce, University of Pennsylvania, and the Institute of Social and Economic Research, Osaka University

Chief Editor: L. R. Klein (University of Pennsylvania)

Co-Editor: M. Morishima (Osaka University)

Volume III

May 1962

Number 2

CONTENTS

The Growth of Television Ownership in the United Kingdom	A. D. Bain
Double K-Class Estimators of Parameters in Simultaneous Equations and Their Small Sample Properties	A. L. Nagar
Some Properties of Group Demand	Thomas J. Finn
On the Stability of a Pure Exchange Equilibrium	F. H. Hahn
The Stability of Exchange Equilibrium: An Alternative Approach	Michio Morishima
On the Stability of Edgeworth's Barter Process	Hirofumi Uzawa
Competitive Stability under Weak Gross substitutability: Nonlinear Price Adjustment and Adaptive Expectations	Kenneth J. Arrow and Leonid Hurwicz
Announcement	

The Review is published fully in English, three times a year. The annual subscription price is \$4.00 per year outside Japan and 1,200 Yen per year in Japan: the price of a single copy is \$1.50 outside Japan, 500 Yen in Japan. Subscriptions outside of Japan should be forwarded to *The International Economic Review*, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia 4, Pa. Subscriptions in Japan should be forwarded to *The International Economic Review*, Kansai Economic Federation, Osaka Building, Soze-cho, Kita-Ku, Osaka, Japan.

Manuscripts for publication should be sent to the chief editor or co-editor of the Review.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE JOURNAL OF FINANCE

Published by **THE AMERICAN FINANCE ASSOCIATION**

Vol. XVII

September 1962

No. 3

Incidence of Inflation Upon Consumer Spending Units 1949-1958	Herbert E. Neil, Jr.
Terms on Conventional Mortgage Loans on Existing Houses	Allen F. Jung
Should the Treasury Auction Long-Term Securities?	Henry N. Goldstein
Influence of Growth Duration on Share Prices	Charles C. Holt
Consumer Credit Costs at Major Types of Financial Institutions	Paul Smith

Membership dues are \$5.00 annually. Student subscription is \$2.00 a year. Libraries may subscribe to *The Journal* at \$5.00 annually. Correspondence with regard to applications for membership in the American Finance Association and subscriptions to *The Journal of Finance* should be addressed to the Secretary-Treasurer, Robert A. Kavesb, Graduate School of Business Administration, New York University, 100 Trinity Place, New York 6, New York.

Communications relating to the contents of *The Journal of Finance* should be addressed to the Editor, Harold G. Fraine, Commerce Building, University of Wisconsin, Madison 6, Wisconsin, or to any of the Associate Editors: William W. Alberts, Graduate School of Business, University of Chicago, Chicago 37, Illinois, Clyde W. Phelps, Department of Economics, University of Southern California, Los Angeles 7, California; and Lawrence S. Ritter, Graduate School of Business Administration, New York University, New York 6, New York.

THE REVIEW OF ECONOMIC STUDIES

Journal of the Economic Study Society

Volume XXIX (2), No. 79

Contents

February 1962

Capital Theory and Development Planning	R. F. Findlay
The Scope of Qualitative Economics	K. J. Lancaster
Automatic Stabilization and the British Taxes on Income	P. H. Pearce
Admissibility and Measurable Utility Functions	J. P. Quirk and R. Saposnik
The Business Propensity to Save and Size of Firm	P. E. Hart
Cournot Points and the Conflict Curves	C. E. Ferguson

This *Journal* is published three times a year in February, June and October. The annual subscription is 32s. 6d. (U.S.A. & Canada \$5.00), single number 12s. 6d. (U.S.A. & Canada \$2.00). Orders and subscriptions may be sent to any bookseller or direct to:

OLIVER AND BOYD LTD.

Tweeddale Court, 14 High St., Edinburgh 1, Scotland

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE INDIAN ECONOMIC JOURNAL

Vol. X

July 1962

No. 1

I Articles

- Interrelationships Between Industry and Agriculture in a Dual Economy ..
.....*Anne O. Krueger*
- A National Accounts Model of India, 1950-51 through 1957-58 ..*D. V. Ramana*
- Demand for and Supply of Money in India*V. K. Sastry*
- The Consumption Function in the Light of Recent Controversies*A. Ghosh*
- Population, Output, and Expenditure in a Sudan Flood Irrigated Region:
The Gash-Tokar Deltas*Peter F. M. McLaughlin*

II Reviews

III Notes

All Communications should be sent to

**The Editor, The Indian Economic Journal,
Department of Economics, University of Bombay
Bombay 1.**

Per copy: Rs. 5 or 7/6 d

or \$1.25 post free

Per annum: Rs. 15

or £1.5 or \$4.00 post free

EL TRIMESTRE ECONOMICO

Director: Oscar Soberón Martínez.—*Comité Editorial:* Jorge Ahumada (Santiago de Chile), Emilio Alanís Patiño, Edmundo Flores, Celso Furtado (Brasil), Emigdio Martínez Adame, Raúl Ortiz Mena, Felipe Pazos, Raúl Prebisch (Santiago de Chile), Raúl Salinas Lozano.

Vol. XXIX (3)

México, D.F., julio-septiembre de 1962

Núm. 115

SUMARIO

Artículos:

- C. Furtado, *Reflexiones sobre la pre-revolución brasileña*
- H. Flores de la Peña, *La alianza para el progreso y la economía mexicana.*
- A. Cervantes Delgado, *La política fiscal y las reformas impositivas de 1962.*
- A. Pinto, *Notas sobre la distribución del ingreso y la estrategia de la redistribución.*
- B. Fisch, *Una reconsideración de la teoría del desarrollo económico de Domar.*
- P. A. Baran, *En torno a la economía política del crecimiento.*

Documentos:

- Discurso pronunciado por el señor Lic. Antonio Ortiz Mena en la XXVIII Convención Nacional Bancaria el 26 de marzo de 1962.
- Acuerdo por el que se constituye una comisión intersecretarial integrada por representantes de las Secretarías de la Presidencia y de Hacienda y Crédito Público, con el fin de que proceda de inmediato a formular planes nacionales para el desarrollo económico y social del país, a corto y largo plazo. 1º. de marzo de 1962.
- Resolución que establece el Instituto Latinoamericano de Planificación Económica y Social (febrero de 1962).

• NOTAS BIBLIOGRAFICAS, REVISTA DE REVISTAS,
PUBLICACIONES RECIBIDAS

El Trimestre Económico, aparece en los meses de enero, abril, julio y octubre de cada año. La suscripción anual cuesta: en México \$50.00, en el extranjero Dls. 5.00. Número suelto: en México \$15.00 an el extranjero Dls. 1.50. Lo edita:

FONDO DE CULTURA ECONOMICA

Suscripciones, anuncios, quejas, etc., Tel: 24-22-04, Srta. Ma. de la Luz Vázquez (9:00 a 13:00 y 16:00 a 18:00 horas). Av. de la Universidad 975, México 12, D. F.—Córdoba 2064, Buenos Aires.

Please mention [®] THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE SOUTHERN ECONOMIC JOURNAL

A Joint Publication of the Southern Economic Association
and the University of North Carolina
Published Quarterly at Chapel Hill, N.C.

Volume XXIX

October 1962

Number 2

CONTENTS

ARTICLES

- Portfolio Balance—The Demand for Money, Bonds, and StockHenry A. Latané
An Index of Distance as Related to Internal MigrationRoger L. Burford
Labor Supply, Total Land Rents, and Agricultural Output in Backward CountriesStephen Enke
Central American Economic IntegrationCharles E. Staley
Transformation Curve in Production Theory: A Pedagogical NoteC. E. Ferguson
Free Enterprise in a Growth WorldKarl de Schweinitz, Jr.

COMMUNICATIONS

Local Subsidies for Industry

- CommentIrving J. Goffman
CommentJames H. Thompson
ReplyJohn E. Moes

BOOK REVIEWS NOTES, BOOKS RECEIVED

*Subscription price is \$6.00 per year. Single copies: current issue \$1.50,
back issues \$2.00*

Address all communications and orders to Dr. James C. Ingram,
Managing Editor, The Southern Economic Journal, P. O. Box 1289,
Chapel Hill, North Carolina.

PUBLIC FINANCE/FINANCES PUBLIQUES

International Quarterly Journal founded by J. A. Monod de Froideville
Publisher/Editeur

Foundation Journal Public Finance/Fondation Revue Finances Publiques
(Stichting Tijdschrift voor Openbare Financiën)

Vol. XVII

1962

No. 2

Lawrence G. Hines

The Hazards of Benefit-Cost Analysis as a Guide to
Public Investment Policy

U. K. Hicks

The Integration of the Budget and the Development
Plan with Special Reference to the Spanish Situation

Paul Senf

Le budget, expression de la volonté politique en Allemagne

Book Reviews/Comptes Rendus

New Publications/Publications nouvelles

Contributions in French or German are followed
by an English summary.

Committee of Directors: M. Masoin, Alan T. Peacock, B. Schendstok, P. Senf

Correspondence should be addressed to Prof. Dr. P. Senf, Universität des Saarlandes,
Saarbrücken 15, Germany. Orders may be placed with the representative in the United
States, Stechert Hafner Inc., 31 East 10th Street, New York, or directly with the Administration,
150 Rieuwstraat, The Hague, Netherlands. Subscription rate for 1 year: \$10.90.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

ECONOMETRICA

Journal of the Econometric Society

Volume 30, No. 2

April, 1962

CONTENTS

United States Imports, 1947-1958	Lawrence B. Krause
Investment, Innovation, and Growth	Benton F. Massell
A Game Theory Model for Agricultural Crop Selection	Sidney Moglewer
Buffer Stocks, Sales Expectations, and Stability: A Multi-Sector Analysis of the Inventory Cycle	Michael C. Lovell
On Devising Unbiased Estimators for the Parameters of Cobb-Douglas Produc- tion Function	Phoebus J. Dhrymes
Preference Scales and Expenditure Systems	S. N. Afriat
Partial Trace Correlations	John W. Hooper
A Note on the Evaluation of the Marginal Efficiency of Capital	Sakari T. Jutila
Note on Program Uncertainty in the Dynamic Programming Problem	Richard C. Kao
Note on the Computation of Full-Information Maximum-Likelihood Estimates of Coefficients of a Simultaneous System	Harry Eisenpress
An Alternate Proof and Extension of Solow's Theorem on Nonnegative Square Matrices	Franklin M. Fisher
Book Reviews	
Announcements	
Report of the Stillwater Meeting	
Report of the Waltair Meeting	

Published Quarterly

Subscription rate available on request

The Econometric Society is an international society for the advancement of economic theory in its relation to statistics and mathematics.

Subscriptions to *Econometrica* and inquiries about the work of the Society and the procedure in applying for membership should be addressed to Richard Ruggles, Secretary, The Econometric Society, Yale University, Box 1264, New Haven, Connecticut, U.S.A.

CANADIAN JOURNAL OF ECONOMICS AND POLITICAL SCIENCE

Volume XXVIII, Number 3

August, 1962

The Development of the Canadian Uranium Industry: An Experiment in Public Enterprise	W. D. G. Hunter
The Presidential Politics of the Franco-Americans	David B. Walker
Optimum Consumption Patterns in High-Income Nations	W. Paul Strassmann
Hats and the Fur Trade	J. F. Crean
The First Dominion Companies Act	A. W. Currie
Regional Factors in Industrial Conflict: The Case of British Columbia	Stuart Jamieson
Parliamentary Government and Political Parties in West Germany ...	Rudolf Heberle
<i>Notes and Memoranda</i>	
The Rate of Change in Money Stock as a Leading Canadian Indicator	George Macesich

Charles Ryle Fay, 1884-1961

Reviews of Books

\$6.00 per year. \$1.50 per single issue

UNIVERSITY OF TORONTO PRESS

Front Campus, University of Toronto, Toronto 5, Canada

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION

Volume 57

September 1962

Number 299

TABLE OF CONTENTS

On Sequential Tests Which Minimize the Maximum Expected Sample Size	Lionel Weiss
A Note on Calculating Tau and Average Tau and on the Sampling Distribution of Average Tau With a Criterion Ranking	Donald W. Stilson and Vincent N. Campbell
Non-Linear Regression with Minimal Assumptions	Harvey M. Wagner
Iterated Test of the Equality of Several Distributions	Robert V. Hogg
More on Length of Confidence Intervals	Albert Madansky
Regression Analysis in Sample Surveys	H. S. Konijn
Wage, Price, and Tax Elasticities of Output and Distributive Shares ...	Hans Brems
The Variance of an Estimator with Post-Stratified Weighting	W. H. Williams
A Method to Determine the Reliability of Telemetry Systems Reports	Charles Martinez
Some Ratio-Type Estimators in Two-Phase Sampling	Balkrishna V. Sukhatma
A Forecasting Model of Federal Purchases of Goods and Services	Murray Brown and Paul J. Taubman
Variance Formulas for the Mean Difference and Coefficient of Concentration	Gerald J. Glasser
Harmonic Analysis of Seasonal Variation with an Application to Hog Production	Martin E. Abel
Some Experimental Design Problems in Attribute Life Testing	Sylvian Ehrenfeld
The Validity of Income Reported by a Sample of Families who Received Welfare Assistance During 1959	Martin David
Book Reviews	

ASA

THE AMERICAN STATISTICAL ASSOCIATION

INVITES AS MEMBERS ALL PERSONS INTERESTED IN:

1. Development of new theory and method
2. Improvement of basic statistical data
3. Application of statistical methods to practical problems

INTERNATIONAL ECONOMIC PAPERS

No. 11

Translations prepared for the International Economic Association

CONTENTS

On Tolls and Transport Charges <i>Annales des Ponts et Chaussées</i> , 1849	Jules Dupuit
The Exchange Ratio of Goods <i>Grundriss der Volkswirtschaftslehre</i> , 1863	Hans Karl Emil von Mangoldt
The Determination of the Rational Wage Rate <i>Nationaløkonomisk Tidsskrift</i> , 1873	F. Bing and J. Petersen
The Comparative Fiscal Burden of Public Debt and Taxation <i>Rivista di diritto finanziario e scienza delle finanze</i> , 1950	Federico Maffezzoni
Production Functions, Technical Progress and Economic Growth <i>Einkommensverteilung und Technischer Fortschritt</i> , 1959	Alfred E. Ott
The Demand for Money <i>Jahrbücher für Nationalökonomie und Statistik</i> , 1960	Friedrich A. Lutz
Household Budget Investigations of Savings <i>Nationaløkonomisk Tidsskrift</i> , 1960	Erling Jørgensen
Foreign Trade and Economic Growth: The Marginal Aspect <i>Økonomisk Tidsskrift</i> , 1961	Bo Södersten

London
Macmillan & Co. Ltd.

1962

New York
The Macmillan Company

A special price of \$3.80 net, plus 12 cents postage, has been arranged in co-operation with The Macmillan Company for members of the American Economic Association. Purchases at the special rate may be made by placing an order with Dr. Harold F. Williamson, Secretary, American Economic Association, Northwestern University. A covering check, made out to The Macmillan Company, must accompany the order.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

JOURNAL OF BUSINESS

Graduate School of Business, University of Chicago, Chicago 37, Illinois

Volume XXXV

July 1962

Number 3

The Firm's Cost Function: A Successful Reconstruction?	Jack Hirschleifer
Economic Theory and the Valuation of Consumers' Wants	John R. Hicks
Consumer Needs and Consumer Sovereignty in the American Economy	Walter Adams
An Evaluation of a Business Game in an MBA Curriculum	James L. McKenney
The International Operations Simulation at the University of Chicago	
.....Hans B. Thorelli, Robert L. Graves, and Lloyd T. Howells	
Inequality in Products, Orders, Customers, Salesmen, and Sales Territories	
.....Harry Deane Wolfe and Gerald Albaum	
Mandatory Functional Discounts: An Appraisal	J. F. Barron
Book Reviews	
Books Received	
Notes: University Schools of Business	

The *Journal of Business* is published quarterly by the University of Chicago Press. Subscriptions are \$6.00 per year and should be addressed to the *Journal of Business*, Graduate School of Business, University of Chicago. Manuscripts in duplicate, typed and double-spaced (including footnotes and quotations), and editorial correspondence should be addressed to Irving Schweiger, Editor, *Journal of Business*, at the same address.

THE ECONOMIC JOURNAL

The Quarterly Journal of the Royal Economic Society

No. 287

September 1962

Vol. LXXII

I. Articles

Earnings in Industries of the United Kingdom, 1948-59	E. H. Phelps Brown and M. H. Browne
The Predictive Accuracy of Empirical Demand Analyses	M. B. Shupack
The Sensitivity of the Yield of Personal Income Tax in the United Kingdom	A. R. Prest
The Relative Security Market Impact of Open-Market Sales and "Equivalent" Reserve-Requirement Increases	H. N. Goldstein
Credit Expansion in an Open Economy	A. N. McLeod
Balanced and Unbalanced Growth in Underdeveloped Countries	M. Lipton
The Choice of the Optimum Technique	A. K. Bagchi

II. Reviews

III. Notes and Memoranda

IV. Recent Periodicals and New Books

MACMILLAN & Co. Ltd., LONDON, W.C.2.

Application for Fellowship to

ROYAL ECONOMIC SOCIETY, 21 Bentinck Street, London, W.1.

Annual Subscription £2.10.0 (or \$7.60)

Life Composition £34.10.0

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

JOURNAL OF FARM ECONOMICS

Published by THE AMERICAN FARM ECONOMIC ASSOCIATION

Editor: HERMAN M. SOUTHWORTH

Pennsylvania State University, University Park, Pa.

Volume XLIV

August, 1962

Number 3

- The Three Economies of AgricultureHarold F. Breimyer
The Process of Agricultural Development in Low-Income CountriesJohn W. Mellor
Long-Run Demand: A Concept, and Elasticity Estimates for MeatsWilliam G. Tomek and Willard W. Cochran
Decomposition of the Beef and Pork CyclesWilbur R. Maki
Dynamic Discrepancies in Agricultural Economic SystemsPinhas Zusman
Some Effects of Income Taxes on Large-Scale AgricultureGerald W. Dean and Harold O. Carter
Federal Crop Insurance Tied to a Bushel-Quota Farm ProgramRalph R. Botts
Prices of Negotiable Marketing Certificates for MilkK. L. Robinson and M. H. MacDonald
Cost Sharing as a Means of Improving the Share Rent LeaseRussell L. Berry
The Intangible Side of Agricultural Marketing—A Neglected Area of ResearchH. S. Irwin
Problems of Soviet AgricultureJan S. Prybyla
- Additional articles notes, book reviews, and announcement of new bulletins and other publications in agricultural economics.

Published in February, May, August, November and December. Yearly subscription, \$9.

Secretary-Treasurer: C. DEL MAR KEARL

Department of Agricultural Economics

Cornell University, Ithaca, New York

THE SUPPLY AND PRICE OF NATURAL GAS

By

M. A. ADELMAN

Professor of Economics, Massachusetts Institute of Technology

Demy 8vo 30s. (\$4.20) net (to subscribers to *The Journal of Industrial Economics*, 15s. (\$2.10))

The study analyzes the nature of costs in petroleum (including both oil and gas), and concludes that the industry is one where costs increase with greater output, so that there is no inherent tendency to chronic surplus and breakdown, and no natural monopoly.

Joint costs in oil-gas production are then analyzed. The notion of "by-products" is rejected; the distinction is drawn between natural gas associated with oil, produced in proportions fixed by nature and therefore with near-zero marginal cost and little response to price changes; and non-associated (often mistitled "dry") gas, a joint product in variable proportion with a marginal cost schedule and where price therefore determines supply.

U. S. data on the supply and price of non-associated gas are then examined, on the assumption that its experience has some predictive value elsewhere. The concluding section first sketches the world crude oil market today, the surplus of supply, downward pressure on prices, and the sometimes paradoxical effects on the bargaining over profit shares. Particular attention is paid to Soviet gas development.

BASIL BLACKWELL Broad Street Oxford England

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE QUARTERLY JOURNAL OF ECONOMICS

Founded 1886

Vol. LXXVI

August, 1962

No. 3

Prosperity and Labor Relations in Europe: The Case of West Germany . . .	Arthur M. Ross
Traditional Production in Primitive African Economies	George Dalton
Determination of Money Wages in American Industry	Otto Eckstein and Thomas A. Wilson
Durable Consumer Goods and American Economic Growth	Arthur H. Cole
An Empirical Approach to the Prisoners' Dilemma Game	Lester B. Lave
The Cost and Efficiency of Distribution in the Soviet Union	Marshall I. Goldman
An Extension of Sidgwick's Equity Principle . . Shirley B. Johnson and Thomas Mayer	
Notes and Discussions	
Some Notes on the Terms of Trade and Economic Development . .	Enrique Lerda
Credit Risk and Credit Rationing	
Comment	Harl E. Ryder, Jr.
Further Comment	Merton H. Miller
Reply	Donald E. Hodgman
The Stability of Growth Equilibrium	
Comment	J. R. Sargent
Reply	F. H. Hahn
A Note on the Theory of Economic Growth	Tetsuhara Okamoto and Ken-ichi Inada
Recent Publications	

Edited by Arthur Smithies for the
Department of Economics, Harvard University
\$1.75 per copy; \$6.00 a year; 3 years \$17.00
Special Student Rate, \$3.00 a year

Order from THE HARVARD UNIVERSITY PRESS
CAMBRIDGE 38, MASSACHUSETTS

RIVISTA INTERNAZIONALE DI SCIENZE ECONOMICHE E COMMERCIALI

Anno IX

Luglio 1962

N. 7

GIOVANNI DEMARIA: Verso il peggioramento della posizione competitiva dell'industria automobilistica italiana
ANGIOLO MAROS DELL'ORO: Neodialettiche economiche
EARL R. SWANSON: Metodi di ricerca sull'economia dell'azienda agraria negli Stati Uniti
HERMAN D. BLOCH: New York Negroes and Organized Labor
PIEROARLO NICOLA: Alcune formulazioni matematiche dell'economia spaziale
ALESSANDRE POGLIANI: I disciplinari tipo nazionale e siciliano per la coltivazione di idrocarburi

Recensioni

Summaries-Zusammenfassungen

Relazioni alle assemblee societarie

Extensive summaries of each article in English and German and occasionally articles completely presented in English and French.

Monthly publication; under the auspices of "Università Commerciale L. Bocconi," Milan. Editorial Office: Via P. Teulì 1, Milano (Italy). Yearly subscription: Italian Lire 4.500; Abroad: Lire 6.000, postage included. Back issues (1954-61): Lire 35.000; cloth-bound (13 vols.): Lire 42.000.

Scottish Journal of Political Economy

(The Journal of the Scottish Economic Society)

Vol. IX

June 1962

No. 2

General Investment Criteria for Less Developed Countries—A Post Mortem	<i>Douglas Dosser</i>
The Balance of Payments and Fiscal Policy in Pakistan	<i>J. R. Parkinson</i>
The Development of the British Dyestuffs Industry	<i>H. W. Richardson</i>
Development of New Shopping Centres: Area Estimation	<i>D. R. Diamond and E. B. Gibb</i>
Further Calculations on Regional Differences in Profitability and Growth	<i>Gordon Fisher</i>
Of Blood and Iron	<i>I. F. Gibson</i>
Current Topics	

The *Scottish Journal of Political Economy* is published in February, June, and October, and is free to members of the Scottish Economic Society. Applications for membership should be made to the Treasurer, Scottish Economic Society, 142 St. Vincent Street, Glasgow C.2., enclosing the annual subscription of £15:0. The *Journal* may also be obtained by non-members of the Society by ordering through any bookseller or direct from the publisher Oliver & Boyd, Tweeddale Court, Edinburgh, price 10/- per single copy.

THE ECONOMIC RECORD

The Journal of the Economic Society of Australia and New Zealand
Published Three Times a Year

Vol. 33

June 1962

No. 82

Articles

- W. E. G. SALTER: Marginal Labour and Investment Coefficients of Australian Manufacturing Industry.
- A. D. BROWNLIE: An Econometric Analysis of Investment in New Zealand Manufacturing 1957-8.
- R. M. PARISH: The Costs of Protecting the Dairying Industry.
- C. P. HARRIS: Private Savings Banks in Australia, 1956-1960.
- B. MCFARLANE: Soviet Investment Policy.
- E. K. FISK: Special Development Problems of a Plural Economy: The Malayan Example.
- D. J. SMYTH: Investment, Growth and the Trade Cycle: The Post-War Australian Experience.

Notes

- R. K. HEFFORD: Foreign Aid—Australia's Contribution
- F. H. GRUEN: An Apology to Messrs. Edwards and Drane.

News and Notes

Reviews

Published four times a year.

Annual Subscription £2. 2. 0

Single Copies 14/-

MELBOURNE UNIVERSITY PRESS

Registered in Australia for transmission by post as a periodical.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

INTERNATIONAL SOCIAL SCIENCE JOURNAL

A quarterly review published by UNESCO, the
United Nations Educational, Scientific and Cul-
tural Organization



Just issued:

IMAGES OF WOMEN IN SOCIETY

Volume XIV, No. 1, 1962

Part I: THE STATUS OF WOMEN IN FRENCH URBAN SOCIETY, by M. J. Chombart de
Lauwe, Group on Social Ethnology, CNRS, Paris.
ATTITUDES TOWARDS THE STATUS OF WOMEN IN POLISH WORKING CLASS FAM-
ILIES: Attitudes towards the respective roles and the equality of the two sexes, and
towards children, by Antonina Kloskowska, Lodz University; Attitudes towards
work by women, by J. Piotrowski, Warsaw University.
WOMEN AND PROFESSIONS IN MOROCCO: Attitudes towards work by women in
Morocco, by Nelly Forget, Group on Social Ethnology, Paris; The changing status
of women and the employment of women in Morocco, by Khadidja Nouacer.
THREE PRELIMINARY STUDIES: CANADA, IVORY COAST, TOGO, by Guy Rocher, Uni-
versity of Montreal; R. Clignet, Institute of Statistics, Abidjan; and F. N. N'Sougan
Agblemagnon.

THE AUSTRIAN WOMAN, by Leopold Rosenmayr, Vienna University.
ATTITUDES REGARDING THE STATUS OF WOMEN IN YUGOSLAVIA, by Olivera Buric,
Social Science Institut, Belgrade.

Part II: Current Studies and Research Centers (17 pages); Reviews of Documents and Books
(39 pages); News and Announcements (14 pages)

Annual subscription \$6.50

This issue \$2.00

Order from:

UNESCO PUBLICATIONS CENTER
801 Third Avenue, New York 22, N.Y.

ECONOMICA

Published Quarterly

Vol. XXIX

August 1962

No. 115

CONTENTS

The Soviet and Polish Quest for a Criterion of Investment Efficiency	<i>Alfred Zauberman</i>
Profits and the Rate of Change in Money Earnings in the United States, 1935-1959	<i>Rattan J. Bhatia</i>
An Exposition of the Equilibrium of the Firm: Symmetry between Product and Factor Analyses	<i>Jack Hirshleifer</i>
Thomas De Quincey and Ricardian Orthodoxy	<i>James A. Gherity</i>
On Optimal Advertising Capital and Research Expenditures Under Dynamic Conditions	<i>Phoebus J. Dhymres</i>
A Note on the Stationary State	<i>José Encarnación, Jr.</i>
A Note on Linear and Homogeneous Functions and Marginal Products	<i>Andreas S. Gerakis</i>
A Multi-Sectoral Study of Economic Growth	<i>Edward Zabel</i>

MEMBERS OF THE AMERICAN ECONOMIC ASSOCIATION may sub-
scribe at the specially reduced rate of 25s. (\$3.71) per annum. Subscriptions
should be sent to the Secretary and Treasurer, American Economic Association,
Evanston, Illinois, accompanied by a cheque drawn in favour of ECONOMICA,
London School of Economics and Political Science.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

JOURNAL OF REGIONAL SCIENCE

Volume III

Winter 1961

Number 2

ARTICLES

- On the Construction of Stochastic Models of Population Growth & Migration ..
.....*John S. de Cani*
- Linear Programming & Location Rent*Benjamin H. Stevens*
- The Relationship Between Transportation Costs and Location Rent in Transportation Problems*Edwin von Böventer*
- "Right to Work" Laws as a Location Factor: The Industrialization Experience of Agriculture States*Benson Sofer and Michael Korenich*
- The Terms of Trade as a Tool of Regional Analysis*Richard L. Pfister*

The *Journal of Regional Science* is published in two issues per volume by the Regional Science Research Institute, G.P.O. Box 8776, Philadelphia 1, Pennsylvania, in cooperation with the Department of Regional Science, Wharton School, University of Pennsylvania. The subscription rate for libraries, business and other organizations, and individuals is \$5.00 per volume or \$2.50 per issue. All orders should be addressed to the Regional Science Research Institute. Address all editorial communications to W. Isard and M. B. Teitz, Editors, *Journal of Regional Science*, G.P.O. Box 8776, Philadelphia 1, Pennsylvania.

KYKLOS

International Review for Social Sciences
Revue Internationale des Sciences Sociales
Internationale Zeitschrift für Sozialwissenschaften

Vol. XV—1962—Fasc. 3

- Welfare and Trade*Stephen Enke*
- Econometric Research in International Trade: A Review*S. J. Prais*
- The Theory and Measurement of Elasticity of Substitution in International Trade
.....*R. M. Stern and E. Zupnick*
- Die Internationale Währungsordnung*René Erbe*
- Capital Imports and Economic Development: Paradox or Orthodoxy?*E. J. Ball*
- Fiscal Policy Considerations for Underdeveloped Economies*Reuben E. Slesinger*
- Social Imbalance and the Marxian System*James F. Becker*
- The Devaluation of the Israel Pound*Schlomo Riemer*

Review Articles:

- The Pound at Home and Abroad (Sir Roy Harrod)
Money, Income and Employment (Gardner Ackley)
Real Wages in Manufacturing (John E. Maher)
- Besprechungen—Comptes rendus—Reviews
- Bibliographie—Bibliography
- Autoren—Auteurs—Authors

All articles are followed by tri-lingual summaries.

Published Quarterly. Annual subscription Swiss Fr. 26.- (postage included).

Order from your bookstore or from the publisher: KYKLOS-VERLAG, Postfach 785, Basel 2, Switzerland.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

LAND ECONOMICS

a quarterly journal of

PLANNING, HOUSING & PUBLIC UTILITIES

Among Articles Appearing in August 1962 issue:

Can People Be Trusted with Natural Resources!	J. W. Milliman
A Theory of Slums	Charles J. Stokes
The Myth of Inter-Railroad Competition	Michael Conant
Economic Feasibility of Federal Power Projects	William Whipple, Jr.
Railroad Rates and the Growth of Coal Trucking in Ohio	Larkin Warner
The Function of the Ancient and Modern City	Homer Hoyt
Are We Headed for Land Reform in the United States?	Floyd L. Cooty
Urban Growth Patterns and the Cost of Local Telephone Service ..	Charles W. Meyer
Some Aspects of Land Use for Livestock Production in Southwest Asia with Particular Reference to Iraq	J. P. H. Van Der Veen
Some Fiscal Implications of Metropolitanism—A Comment	John Riew
Some Notes on Capital Budgeting	Walter K. Johnson

Annual Subscription \$6.00

Single Copy \$2.00

Sterling Hall, University of Wisconsin

Madison 6, Wisconsin

ÉCONOMIE APPLIQUÉE

*Archives de l'Institut de Science Economique Appliquée
(The French Journal of Economic Science)*

Tome XV—Nos. 1-2

Janvier-Juin 1962

- F. PERROUX: Le quatrième plan français 1962-1965—En quoi consiste notre planification indicative.
- H. BARTOLI: La rationalité des décisions de politique économique et la crise du pouvoir dans les sociétés capitalistes industrielles.
- M. NIVEAU: La planification indicative en France et l'équilibre des paiements extérieurs.
- G. DESTANNE DE BERNIS: Le rôle du secteur public dans l'industrialisation (cas des Pays sous-développés).
- J. MARCZEWSKI: Conjoncture et développement planifié.
- A. COTTA: Un modèle intersectoriel de croissance.
- M. BYE, S. JEANNENEY, P. GUILLAUMONT: Monnaie et croissance (Cahier A 12)
- M. GRENIER, F. ROSENFELD, J. H. CUMBERLAND, J. R. BOUDEVILLE: Modèles opérationnels régionaux (Cahier L n° 9).
- P. SENF, F. NEUMARK, O. EMMINGER, A. MULLER, ARMACK, J. MARCZEWSKI: La coordination des Politiques Conjoncturales en Europe (Cahier HS N° 6)
- J. M. COLLETTE: Le taux de croissance du Revenu National Soviétique (Cahier G n° 12)

• ECONOMIE APPLIQUEE et CAHIERS DE L'INSTITUT DE
SCIENCE ECONOMIQUE APPLIQUEE

Directeur: François PERROUX; Secrétaire Général: H. BONJOUR
(I.S.E.A., 35, Boulevard des Capucines, Paris 2e).

The subscription price is 2.800 Frs. per year.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

REVUE DE SCIENCE FINANCIÈRE

SOMMAIRE—n° III

1962

- I—De la psychologie sociale de l'impôt à une psychologie financière générale par Schmolders (G) Cologne.
- II—Comptabilité publique et comptabilité privée par LAMARQUE (J) chargé de cours à la Faculté de Droit et de Science Economiques de Bordeaux.
- III—Contribution à une étude théorique des incidences de l'impôt sur les sociétés par Mombert (F).
- IV—Fiscalité directe et sous développement: l'exemple du département d'Outre-Mer de la Martinique par Cotteret (J.M.) Faculté de Droit et des Sciences Economiques de Poitiers.
- V—Note sur le taux d'intérêt au jour le jour par Pottier (P) chargé de cours à la Faculté de Droit et de Sciences Economiques de Montpellier.
- VI—Chronique et fiscalité française par J. Mériquot (Bordeaux)
- VIII—Chronique financière française par J. Le Bourva (Reims)
- VIII—Documents financiers par Basso (J)
- IX—Revue des Livres.
- X—Index bibliographique.

Revue trimestrielle. Abonnement annuel : Etranger : 45 NF français Le numéro : 11 NF, 50.

LIBRAIRIE GENERALE DE DROIT ET DE JURISPRUDENCE
Paris 5e

20, rue Soufflot

A good way to keep informed about European and World Affairs is to read regularly

EUROPA-ARCHIV

The Journal of the German Council on Foreign Relations

Edited by Wilhelm Cornides

EUROPA-ARCHIV, now in its 17th year of publication, contains articles and documents on international relations and a current chronology of world events as well as review articles of recent publications.

Articles in recent issues:

Nils Örvik:

Abrüstung und nationale Interessen. Wie stark ist das sowjetische Interesse an einem Abrüstungsabkommen?
Die Handelsvorschläge der amerikanischen Regierung

William Diebold und

Helena Stalson:

Janez Stanovnik:

Die regionale Wirtschaftsintegration als Mittel der Weltpolitik. Die europäische Integration in jugoslawischer Sicht.

Otto Stenzl:

Boris Meissner:

Der Kalte Krieg und seine Ursachen (Literaturbeitrag)
Sowjetrußland und der Ostblock: Hegemonie oder Imperium?

D. P. Singhal:

"Malaysia": die geplante Konföderation von Malaya, Singapur und Britisch-Borneo

Annual subscription (24 issues) DM 56,—plus postage. Specimen copies on request.

DEUTSCHE GESELLSCHAFT FÜR AUSWÄRTIGE POLITIK,
Vertriebsstelle EUROPA-ARCHIV, Frankfurt am Main,
Grosse Eschenheimer Strasse 16-18

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

FROM THE FREE PRESS FALL LIST IN ECONOMICS

Main Currents in Modern Economics Economic Thought Since 1870

By Ben B. Seligman

This book provides the first critical examination of *all* major strands of modern economic thought, from the nineteenth century anti-classical revolts to the most recent developments. Mr. Seligman approaches his subject historically, treating the evolution of doctrine in terms of successive responses to the challenges of ever-shifting environment.

The organization is based on major schools of thought, allowing students to trace the development of each body of theory through all its typical phases: promulgation, critical attack, empirical testing, and logical refinement.

Just published, 887 pages, \$11.75

THE ECONOMICS OF EDUCATION

By John Vaizey, University of London Institute of Education

Education as an *economic* resource is the subject of this pioneering work. It focuses on the role of education in economic growth — investment in human beings... returns... measuring productivity... role in public finance. The author also explores how to provide for expansion of education programs most fruitfully and efficiently.

Just published, \$4.00

PROSPECTS FOR INDIAN DEVELOPMENT

By Wilfred Malenbaum, University of Pennsylvania

The author analyzes Indian economic progress in the last decade as a basis for assessing the possibilities for the future — particularly under the third five-year plan, which runs until 1966. This book is the first to treat Indian economic growth as a comprehensive process rather than as a government program. It emphasizes the interplay between private and public activities.

Just published, \$6.00

SOME ASPECTS OF INDUSTRIAL FINANCE IN INDIA

By George Rosen, United Nations

This book examines capital markets, banks, and special financial institutions in India, carefully evaluating their contributions to economic growth. The author uses empirical data to develop an appropriate theoretical framework—from which useful lessons can be drawn for dealing with the standard economic problems of underdeveloped countries.

Just published, \$6.50



THE FREE PRESS OF GLENCOE

A Division of The Macmillan Company, 60 Fifth Avenue, New York 11, New York

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

NOTICE

To MEMBERS and SUBSCRIBERS

INCREASE IN RATES

At the March 23-24, 1962, meeting of the Executive Committee of the Association, it was decided to adopt the following rate schedule, effective as of January 1, 1963:

Annual dues	\$ 8.00
Family membership	1.00
Junior (student) membership	4.00
Subscribing membership	10.00
Contributing membership	25.00 or more
Subscription to the <i>A. E. R.</i>	8.00

The members of the Executive Committee felt this action was necessary to enable the Association to continue present services to its members and to meet rising publishing costs of the *American Economic Review* and a new edition of the *Handbook*. It should be noted that membership dues and subscription rates have not been changed since 1950. The present schedule of rates is well below that of most other professional organizations.

HAROLD F. WILLIAMSON
Secretary

ECONOMICA

Published Quarterly

Vol. XXIX

May 1962

No. 114

CONTENTS

- Identities in Economic Models *K. Klappholz and E. J. Mishan*
Optimal Advertising Policy Under Dynamic Conditions
..... *Marc Nerlove and Kenneth J. Arrow*
Financial Intermediaries and Monetary Policy *A. B. Cramp*
Robert Torrens: Colonel of Marines and Political Economist
..... *Frank Whitson Fetter*
The Technical Progress Function and the Production Function *J. Black*
The Effect of Price-Level Changes on Real Private Wealth in the United
Kingdom 1954-60 *Ralph Turvey*
Multiple Exchange Rates and the Attainment of Multiple Policy Objectives...
..... *Werner Baer and Michel E. A. Hervé*
A Manchester Merchant and His Schedules of Supply and Demand... *B. W. Clapp*
Some Comments on "Approaches to Stability Analysis" *Takashi Negishi*
The Stages of Growth *P. T. Bauer and Charles Wilson*

MEMBERS OF THE AMERICAN ECONOMIC ASSOCIATION may subscribe at the specially reduced rate of 25s. (\$3.71) per annum. Subscriptions should be sent to the Secretary and Treasurer, American Economic Association, Evanston, Illinois, accompanied by a cheque drawn in favour of ECONOMICA, London School of Economics and Political Science.

JOURNAL OF BUSINESS

Graduate School of Business, University of Chicago, Chicago 37, Illinois

Volume XXXV

January 1962

Number 1

- Administered Prices and Oligopolistic Inflation *George J. Stigler*
Cyclical Behavior of National Advertising *David M. Blank*
The Determination of Asset Values *David Solomons*
Brand Choice as a Probability Process *Ronald E. Frank*
Shareowner Brand Preferences *Kenneth P. Uhl*
Impact of the Compact Cars on New-Car Prices: A Reappraisal *Allen F. Jung*

Book Reviews

Books Received

Notes: University Schools of Business

Doctoral Dissertations Accepted, 1960-61

The *Journal of Business* is published quarterly by the University of Chicago Press. Subscriptions are \$6.00 per year and should be addressed to the *Journal of Business*, Graduate School of Business, University of Chicago. Manuscripts in duplicate, typed and double-spaced (including footnotes and quotations), and editorial correspondence should be address to Irving Schweiger, Editor, *Journal of Business*, at the same address.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Scottish Journal of Political Economy

(The Journal of the Scottish Economic Society)

Vol. IX

February 1962

No. 1

Pay Policy after the Pause	<i>T. L. Johnston</i>
Sir James Steuart: Economics and Politics	<i>A. Skinner</i>
The Taxation of Wealth at Death: A New Proposal	<i>Aian Tait</i>
The Rise and Decline of Municipal Transport	<i>J. Sleeman</i>
Customs Union in East and Central Africa	<i>Ian G. Stewart</i>
Scottish Council Report on the Scottish Economy	<i>D. J. Robertson</i>
Scotland's Natural Resources	<i>G. McCrone</i>
Obituary: Mary Rankin	<i>Alan Thompson</i>

The *Scottish Journal of Political Economy* is published in February, June, and October, and is free to members of the Scottish Economic Society. Applications for membership should be made to the Treasurer, Scottish Economic Society, 142 St. Vincent Street, Glasgow C.2., enclosing the annual subscription of £15:0. The *Journal* may also be obtained by non-members of the Society by ordering through any bookseller or direct from the publisher Oliver & Boyd, Tweeddale Court, Edinburgh, price 10/- per single copy.

A good way to keep informed about European and World Affairs is to read regularly

EUROPA-ARCHIV

The Journal of the German Council on Foreign Relations

Edited by Wilhelm Cornides

Articles in recent issues:

Zwischenbilanz der Europa-Politik 1961	<i>Maurice Faure</i>
Die Ergebnisse des 22. Parteikongresses der KPdSU	<i>Boris Meissner</i>
Grundzüge der Wirtschafts- und Gesellschaftspolitik Sekou Tourés. Interview mit dem Staatspräsidenten von Guinea	<i>R. J. Guillon</i>
Von der "National"—Oekonomie zur Europäischen Wirtschaftsunion	<i>Norbert Kohlbase</i>
Neoliberalismus und europäische Integration	<i>Jacques Stobler</i>
Goa und die Problematik des Peaceful Change	<i>Wilhelm Kewenig</i>

The EUROPA-ARCHIV, now in its 17th year of publication, contains articles and documents on international relations and a current chronology of world events as well as review articles of recent publications.

Annual subscription (24 issues) DM 56,—plus postage

Specimen copies on request

DEUTSCHE GESELLSCHAFT FÜR AUSWÄRTIGE POLITIK

Abt. Europa-Archiv, Bonn am Rhein, Schaumburg-Lippe-Str. 6

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE ECONOMIC JOURNAL

The Quarterly Journal of the Royal Economic Society

No. 286.

June 1962

Vol. LXXII

I. Articles

- On Making a Recommendation in a Democracy *J. De V. Graaff*
Notes on Welfare Economics and the Theory of Democracy *H. Liebenstein*
Income, Leisure and Wage Pressure *L. N. Moses*
Some Thoughts on the Cement Judgement *A. Beacham*
Production Function, Market Imperfections and Economic Development *G. Ranis*
Malthus and Keynes: A note *S. Hollander*
Optimum Savings Reconsidered, or Ramsey Without Tears *J. Black*
The Mathematical Formulation of Harrod's Growth Model *J. W. Neville*

II. Reviews

III. Notes and Memoranda

IV. Recent Periodicals and New Books

MACMILLAN & Co. Ltd., LONDON, W.C.2.

Application for Fellowship to

ROYAL ECONOMIC SOCIETY, 21 Bentinck Street, London, W.1.

Annual Subscription £2.10.0 (or \$7.60)

Life Composition £34.10.0

INTERNATIONAL SOCIAL SCIENCE JOURNAL



A quarterly review published by UNESCO, the United Nations Educational, Scientific and Cultural Organization.

THE PARLIAMENTARY PROFESSION

Volume XIII, No. 4, 1961

- Part I:* MEMBERS OF THE FRENCH PARLIAMENT, by Léo Hamon, Member of the Faculty of Law and Economics, Dijon.
THE KNESSET, by Benjamin Akzin, Hebrew University, Jerusalem
PARLIAMENTARIANS IN ITALY, by G. Sartori, Istituto di Sociologia e Scienza Politica, Florence
THE BRITISH HOUSE OF COMMONS, by H. B. Berrington, University College of North Staffordshire and S. E. Finer, University College of North Staffordshire
UNITED STATES SENATORS: a collective portrait, by Donald R. Matthews, University of North Carolina
THE SUPREME SOVIET OF THE USSR AND ITS MEMBERS, by K. Gubin, Member of the Supreme Soviet of the USSR

- Part II:* The World of the Social Sciences: Current Studies and Research Centers (13 pages) Reviews of Documents and Books (26 pages) News and Announcements (4 pages)

Annual subscription \$6.50

THIS ISSUE—\$2.00

Order from: UNESCO PUBLICATIONS CENTER
801 Third Avenue, New York 22, N.Y.

Please mention *THE AMERICAN ECONOMIC REVIEW* When Writing to Advertisers

ECONOMIA INTERNAZIONALE

Quarterly Review

Vol. XV, No. 1

CONTENTS

February, 1962

- Luigi Einaudi *A. Scotto*
Le dimensioni globali del problema economico del Mezzogiorno .. *A. Campolongo*
International Gaps in the Rate of Economic Growth *M. Okada*
Business Fluctuations Under Competitive Conditions *M. R. Kumara Swamy*
La pratiche restrittive e i monopoli in Australia *A. Hunter*
Costa Rica and the Central American Common Market *C. E. Staley*

Bollettino Bibliografico ed Emerografico: Books Review—Titles of articles on recent periodicals—Summary of articles issued on recent periodicals.

Annual subscription to "Economia Internazionale" It. Liras 5.000. Applications for subscription and correspondence should be addressed to the Direzione Istituto di Economia Internazionale, via Garibaldi 4, Genova (Italy).

REVUE DE SCIENCE FINANCIÈRE

No. 2—1962

SOMMAIRE

- I—Le Champ étroit de l'auto-financement régional par J. G. MERIGOT—Faculté de Droit et de Sciences Economiques de Bordeaux.
II—Considérations sur l'imposition des gains de capital par E. J. REIG—Mexique.
III—Indépendance politique, Indépendance Financière par R. MARTINOT—Faculté de Droit de Toulouse.
IV—Finances Publiques et parité agriculture—industrie par H. BOURGUINAT—Faculté de Droit et de Sciences Economiques de Bordeaux.
V—Les encouragements à l'exportation en France par SECHE—Faculté de Droit et de Sciences Economiques de POITIERS.
VI—Chronique financière étrangère par J. LECAILLON—Faculté de Droit et de Sciences Economiques de LILLE.
VII—Chronique de jurisprudence fiscale par M. CHRESTIEN—Faculté de Droit et de Sciences Economiques de LILLE.
VIII—Revue des Livres.
IX—Index bibliographique.

Revue trimestrielle. Abonnement annuel : Etranger : 45 NF français Le numéro : 11 NF, 50.

LIBRAIRIE GENERALE DE DROIT ET DE JURISPRUDENCE 20, rue Soufflot
Paris 5e

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

CANADIAN JOURNAL OF ECONOMICS AND POLITICAL SCIENCE

Volume XXVIII, Number 2

May, 1962

Organisation sociale et valeurs culturelles canadiennes-françaises ..	Philippe Garigue
Canadian Life Insurance Companies and the Capital Market, 1890-1914	Ian M. Drummond
Politics and Broadcasting: Case Studies of Political Interference in National Broad- casting Systems	T. H. Qualter
The Taxation of Capital Gains: An Economic Analysis	Irving J. Goffman
<i>Notes and Memoranda</i>	
Determinants of Monetary Velocity in Canada, 1926-1958	George Macesich
The Characteristics of the Unemployed: Some Implications of the James Report to the Senate Committee on Manpower and Employment	Douglas O. Hartle
Unemployment Insurance in Canada: The Problem of Conflicting Principles	James P. Cairns
Malthus and the Utilitarians	Thomas Sowell
A Note on Some Lesser-Known Works of Eric Lindahl	William P. Yohe
A Note on the Measurement of Capital	H. A. John Green
George Edwin Britnell, 1903-1961	
Keith Brandon Callard, 1924-1961	

Review Articles

Towards a Social Welfare Function	Brian Bixley
Two Views of Social Purpose for Canada ..	Alexander Brady and Ian M. Drummond

\$6.00 per year. \$1.50 per single issue

UNIVERSITY OF TORONTO PRESS

Front Campus, University of Toronto, Toronto 5, Canada

ECONOMETRICA

Journal of the Econometric Society

Volume 30, No. 1

January, 1962

CONTENTS

Henry L. Moore and Statistical Economics	George J. Stigler
The Effect of Consumer Experience on Brand Loyalty and the Structure of Market Demand	Harold Demsetz
Estimation of Production Function Parameters Combining Time-Series and Cross- Section Data	Irving Hoch
Three-Stage Least Squares: Simultaneous Estimation of Simultaneous Equations	Arnold Zellner and H. Theil
Identification and Estimation in a Simultaneous Equations Model with Errors in the Variables	H. S. Konijn
Economic Growth and the Theory of International Income Flows	Murray Brown and Ronald Jones
The Pattern of Japanese Growth, 1914-1954	Hollis B. Chenery, Shuntaro Shishido, and Tsunehiko Watanabe
A Mathematical Investigation of Some Economic Effects of Profit Sharing in So- cialist Firms	J. Kornai and T. Lipták
The Influence of Errors on the Correlation of Ratios	F. E. A. Briggs
The Existence of an Optimum Savings Program	S. Chakravarty
Compte Rendu du Congrès de Naples	
Letter to the Editor	R. L. Basmann
Book Reviews	
Announcement and Notes	

Published Quarterly

Subscription rate available on request

The Econometric Society is an international society for the advancement of economic theory in its relation to statistics and mathematics.

Subscriptions to *Econometrica* and inquiries about the work of the Society and the procedure in applying for membership should be addressed to Richard Ruggles, Secretary, The Econometric Society, Yale University, Box 1264, New Haven, Connecticut, U.S.A.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE ECONOMIC RECORD

The Journal of the Economic Society of Australia and New Zealand
Published Three Times a Year

Vol. 38

March 1962

No. 81

Articles

SIR DOUGLAS COPLAND: Problems of 1962 and their Impact on the Australian Economy.

D. L. ELSWORTH: Trends and Problems in Industrial and Commercial Building.

M. C. KEMP: Foreign Investment and the National Advantage.

J. K. GIFFORD: Wicked Words and Wicked Ideas.

CRAUFURD D. W. GOODWIN: Alfred de Lissa and the Birth of the Multiplier.

R. L. MATHEWS: The Australian Flow-of-Funds Accounts.

Notes

M. C. KEMP: The Benefits and Costs of Private Investment from Abroad: Comment.

A. R. HALL: The Full Employment Demand for Imports, 1963-64.

A. R. HALL: The Australian Male Work Force.

News and Notes

Reviews

Published four times a year.

Annual Subscription £2. 2. 0

Single Copies 14/-

MELBOURNE UNIVERSITY PRESS

Registered in Australia for transmission by post as a periodical.

FOOD RESEARCH INSTITUTE STUDIES

Volume III

February 1962

Number 1

Contents

Communes and the Agricultural Crisis in Communist China
.....Philip P. Jones and Thomas T. Poleman

Seasonal Pattern of Wheat Futures Prices Under the Loan Program
.....Roger W. Gray

Consumption of Exotic Consumer Goods as an Indicator of Economic
Achievement in Ten Countries of Tropical Africa
.....William O. Jones and Christian Méral

Food Research Institute Studies is published in February, May and November.
Annual subscription, \$7.00. Single copy, \$2.50.

FOOD RESEARCH INSTITUTE
Stanford University
Stanford, California

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION

Volume 57

June 1962

Number 298

TABLE OF CONTENTS

On the Foundations of Statistical Inference	<i>Allan Birnbaum</i>
The Case of the Indians and the Teen-Age Widows	<i>Ansley J. Coale and Frederick F. Stephan</i>
Distribution of Total Service Time for a Fixed Observation Interval	<i>W. S. Connor and Norman C. Severo</i>
Sequences of Fractional Replicates in the 2^{p-q} Series	<i>Cuthbert Daniel</i>
Joint Estimation of the Parameters of Two Normal Populations	<i>R. I. Fields, Clyde Y. Kramer and C. W. Chunies-Ross</i>
Development of Sampling Plans by Using Sequential (Item by Item) Selection Techniques and Digital Computers	<i>C. T. Fan, Mervin E. Muller and Ivan Rezuca</i>
Best Linear Unbiased Prediction in the Generalized Linear Regression Model	<i>Arthur S. Goldberger</i>
A Sequential Method for Screening Experimental Variables	<i>Ohou Hsiung Li</i>
Latent Class Analysis and Differential Mortality	<i>C. R. Müller, G. Sabagh and H. F. Dingman</i>
Expected Values and Standard Deviations of the Reciprocal of a Variable from a Decapitated Negative Binomial Distribution	<i>Paul R. Rider</i>
A Generalization of the Ballot Problem and Its Application in the Theory of Queues	<i>Lajos Takács</i>
An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias	<i>Arnold Zellner</i>

For further information, please contact: American Statistical Association, 810 18th Street, N.W., Washington 6, D.C.

ASA

THE AMERICAN STATISTICAL ASSOCIATION

INVITES AS MEMBERS ALL PERSONS INTERESTED IN:

1. Development of new theory and method
2. Improvement of basic statistical data
3. Application of statistical methods to practical problems

INTERNATIONAL STUDIES

*Quarterly Journal of the Indian School of International Studies,
New Delhi*

International Studies contains articles in the fields of modern International Politics, Economics, and Law as well as on political, economic and social developments in Asia and other areas.

Vol. III

No. 4 (April 1962)

CONTENTS

India and Pakistan as Factors in each other's Foreign Policy and Relations M. S. Rajan	
American Socialists, The Roosevelt Administration, and The Spanish Civil War 1936-39	<i>M. S. Venkataramani</i>
Non-Alignment as a Factor in Ceylon's Foreign Policy	<i>Urmila Phadnis</i>
<i>Notes and Memoranda : Survey of Source Material : Bibliography</i>	

Annual Subscription: Rs.22: s.40: \$6.60

Single Copy: Rs. 6: s.11: \$1.80

Copies may be obtained from the publishers, Asia Publishing House, at the following addresses:

ASIA PUBLISHING HOUSE

447 Strand
London W.C.2

Nicol Road
Bombay 1

119 West 57th Street
New York 1, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

JOURNAL OF FARM ECONOMICS

Published by THE AMERICAN FARM ECONOMIC ASSOCIATION

Editor: HERMAN M. SOUTHWORTH
Pennsylvania State University, University Park, Pa.

Volume XLIV

February, 1962

Number 1

- The Study of Interactions Between Agriculture and the Nonfarm Economy: Local, Regional and National *Karl A. Fox*
Public Pricing of Natural Resources *Michael F. Brewer*
Transfer Restrictions and Misallocation in Grazing Public Range *B. Delworth Gardner*
Regional Location of Beef Cattle Feeding *Lee F. Schrader and Gordon A. King*
Estimating the Reliability of Quantities Derived from Empirical Production Functions *Wayne A. Fuller*
Non-Linear Programming and Non-Linear Regression Procedures *Clark Edwards*
Ramifications of the Relationship Between Income and Food *Marguerite C. Burk*
Some Price Discrimination Aspects in Bank Farm Loan Interest Rates *Reynold P. Dahl*
Parity Income Prices *Curtis C. Harris, Jr.*
The "Cost of the Wrong Decision" as a Guide in Production Research *Joseph Havlicek, Jr., and James A. Seagraves*

Additional articles notes, book reviews, and announcement of new bulletins and other publications in agricultural economics.

Published in February, May, August, November and December. Yearly subscription, \$9.

Secretary-Treasurer: C. DEL MAR KEARL
Department of Agricultural Economics
Cornell University, Ithaca, New York

OXFORD ECONOMIC PAPERS

Editorial Board: N. H. Leyland (General Editor), P. D. Henderson, J. R. Hicks, Sir Donald MacDougall, G. B. Richardson, M. F. G. Scott, J. F. Wright (Secretary).

Volume 14

February 1962

Number 1

CONTENTS

- A Critical Examination of India's Third Five-Year Plan *I. M. D. Little*
Equity and Efficiency: The Problem of Optimal Investment in a Framework of Underdevelopment *T. Balogh*
The Marginal Rate of Saving in the Indian Economy *K. N. Raj*
Indian Balance of Payments Policy and Exchange Auctions *J. Bhagwati*
Economic Theory and Agrarian Reform *V. M. Dandekar*
The Service Worker in United States Manufacturing and Employment Stability *D. E. Diamond*
Notes on the Transfer of Overseas Lending and Grants *A. G. Ford*
Alternative Patterns of Growth: A Comment *M. F. G. Scott*
The Conditions for Constant Growth in the Model of Raj and Sen *J. Parry Lewis*
A Note on the Patterns of Growth with Stagnant Export Earnings *George Rosen*
On How to Decide What to Import and What to Produce *J. Bhagwati*

Oxford Economic Papers is published three times a year in February, June and October. The pre-paid subscription price is 35s. Od. (\$5.25) post free, and the price of a single copy 16s. Od. net. Orders may be placed with any bookseller or sent direct to the Publisher. One specimen copy will be sent free on request.

OXFORD UNIVERSITY PRESS
AMEN HOUSE, WARWICK SQUARE, LONDON, E.C.4.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE QUARTERLY JOURNAL OF ECONOMICS

Founded 1886

Vol. LXXVI

May, 1962

No. 2

Notes on Ideal Output	David McCord Wright
Effects of Foreign Surplus Disposal in Underdeveloped Economies	D. R. Khatri
Expectations, Bond Prices, and the Term Structure of Interest Rates	Burton G. Malkiel
Simulation and Long-Range Planning for Resource Allocation	Robert M. Rauner and Wilbur A. Steger
A Reconsideration of Restrictions on Bank Entry	David A. Alhadeff
A Multisectoral Model of Growth	Phoebus J. Dhrymes
Disguised and Overt Unemployment in Underdeveloped Economies	Paul Wonnacott
Investment Criteria, Productivity and Economic Development: An Empirical Com- ment	Gustav Ranis
Organization and Productivity in Backward Economies	Peter Küby
Notes and Discussions	
Security and a Financial Theory of Investment	Morris Mendelson
Comment	Myron J. Gordon
Reply	
Steel, Administered Prices and Inflation	Warren S. Gramm
Comment	M. A. Adelman
Reply	

Recent Publications

Edited by Arthur Smithies for the
Department of Economics, Harvard University

\$1.75 per copy; \$6.00 a year; 3 years \$17.00
Special Student Rate, \$3.00 a year

Order from THE HARVARD UNIVERSITY PRESS
CAMBRIDGE 38, MASSACHUSETTS

K Y K L O S

International Review for Social Sciences
Revue Internationale des Sciences Sociales
Internationale Zeitschrift für Sozialwissenschaften

Vol. XV—1962—Fasc. 2

Structural Factors in the Retardation of French Economic Growth	Tom Kemp
Domestic Investment, the Foreign Trade Balance and the World Bank	William R. Allen
Managerial Attitudes and Economic Development	Albert Lauterbach
Enterprise, Initiative and Economic Policy	R. S. Bhambhani
Vilfredo Pareto als Wissenssoziologe	Gottfried Eisermann
The Study of the Influence of the Mass Media on Public Opinion	Arnold M. Rose
The Causes of the Export Lag of the Industrializing Countries:	
A Comment	K. Bieda
A Reply	A. Maizels
Balance of Payment and Growth. Un commentaire	Maurice Bye

Besprechungen—Comptes rendus—Reviews

Bibliographie—Bibliography

Autoren—Auteurs—Authors

All articles are followed by tri-lingual summaries.

Published Quarterly. Annual subscription Swiss Fr. 26.- (postage included).

Order from your bookstore or from the publisher: KYKLOS-VERLAG, Postfach 785,
Basel 2, Switzerland.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE SOUTHERN ECONOMIC JOURNAL

A Joint Publication of the Southern Economic Association
and the University of North Carolina

Published Quarterly at Chapel Hill, N.C.

Volume XXVIII

April 1962

Number 4

CONTENTS

ARTICLES

- The Adaptability of Fixed Productive Services in the Short Run *Eirik G. Furubotn*
Inflation and the Structure of Employment *John P. Henderson*
The Magnitude of the Discount Rate for Government Projects *William L. Miller*
Operations Research and the Theory of the Firm *Almarin Phillips*
On the Classification of Inventions *Norton C. Seiber*
The Economics of Highway Congestion *Edward F. Renshaw*
Integration as an Adjustment to Risk and Uncertainty *H. R. Jensen, E. W. Kehrberg, and D. W. Thomas*

COMMUNICATIONS

- Epistemological Problems of Economics
Comment *Murray N. Rothbard*
Reply *C. E. Ayres*
On the Inequality of the Rate of Profit and the Rate of Interest
Comment *Avery B. Coban*
Reply *Calvin B. Hoover*
Extension of the Classical Rule of "Divide and Choose" *Eugene Singer*

BOOK REVIEWS, NOTES, BOOKS RECEIVED

Subscription price is \$6.00 per year. Single copies: current issue \$1.50,
back issues \$2.00

Address all communications and orders to Dr. James C. Ingram,
Managing Editor, The Southern Economic Journal, P. O. Box 1289,
Chapel Hill, North Carolina.

METROECONOMICA

International Review of Economics

Vol. XIV

No. 3

- Elementary proof of propositions on Leontief-Minkoswky matrices
..... *D. T. W. Bear and others*
Interindustry analysis and the structure of income distribution
..... *K. Miyarawa and S. Massai*
Is investment really unimportant? (2nd part) *B. F. Massel*

Board of Editors: C. Bresciani Turrone, E. Fossati (Managing Editor), R. Frisch, W. Leontief, G. Lutfalla, A. Mahr, J. Marschak, G. U. Papi, R. W. Pfouts, R. Roy, E. Schneider, G. L. S. Shackle, R. Stone, J. Tinbergen, G. Tintner, F. Zeuthen.

Published every four months. Subscription rate \$7 per year (two years \$12). Communications to the editor to be addressed to Professor Eraldo Fossati, director of the *Laboratorio di economia Vilfredo Pareto, Università, via Balbi 5, Genova (Italy)*. Communications regarding subscriptions should be sent to Licinio Cappelli, Corso Italia 12, Trieste or G. E. Stechert-Hafner, Inc., 31 East Tenth Street, New York 3, N.Y., U.S.A.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

EL TRIMESTRE ECONOMICO

Director: Oscar Soberón Martínez.—*Comité Editorial:* Jorge Ahumada (Santiago de Chile), Emilio Alanís Patiño, Edmundo Flores, Celso Furtado (Brasil), Emigdio Martínez Adame, Raúl Ortiz Mena, Felipe Pazos, Raúl Prebisch (Santiago de Chile), Raúl Salinas Lozano.

Vol. XXIX (2)

México, abril-junio de 1962

Núm. 114

SUMARIO

Artículos:

- A. López Romero, *Un sistema de prioridades de inversión para la minería*
A. Sacristán Colás, *Ensayos en Teoría general del crecimiento*
G. Ranis y J. C. H. Fei, *Una teoría del desarrollo económico*
B. F. Johnston y J. W. Mellor, *El papel de la agricultura en el desarrollo económico*
H. B. Chenery, *Política de desarrollo y ventajas comparativas*

Documentos:

- Exposición de motivos de las reformas a la luz del impuesto sobre la renta (diciembre de 1961)
Ley del Seguro Agrícola Integral y Ganadero (diciembre de 1961)

NOTAS BIBLIOGRAFICAS, REVISTA DE REVISTAS,
PUBLICACIONES RECIBIDAS

El Trimestre Económico, aparece en los meses de enero, abril, julio y octubre de cada año. La suscripción anual cuesta: en México \$50.00, en el extranjero Dls. 5.00. Número suelto: en México \$15.00 an el extranjero Dls. 1.50. Lo edita:

FONDO DE CULTURA ECONOMICA

Suscripciones, anuncios, quejas, etc., Tel: 24-22-04, Srita. Ma. de la Luz Vázquez (9:00 a 13:00 y 16:00 a 18:00 horas). Av. de la Universidad 975, México 12, D. F.—Córdoba 2064, Buenos Aires.

THE INDIAN ECONOMIC JOURNAL

Vol. IX

April 1962

No. 4

I Articles

- The Applicability and Limitations of Economic Development Theory *Shigeto Tsuru*
Tax Resources for the Third Plan *M. H. Gopal*
Economic Growth and Price Level in The American Economy *Julius Rezler*
A Programming Application of the Input-Output Model in India
..... *M. Ramchandran and J. K. Sengupta*
Cooperative Farming, Investment and Organizational Problems in Agriculture *V. N. Kothari*

II Reviews

III Notes

All Communications should be sent to

**The Editor, The Indian Economic Journal,
Department of Economics, University of Bombay
Bombay 1.**

Per copy: Rs. 5 or 7/6 d
or \$1.25 post free

Per annum: Rs. 15
or £1-5 or \$4.00 post free

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE REVIEW OF ECONOMIC STUDIES

Journal of the Economic Study Society

Volume XXIX (2), No. 79

Contents

February 1962

Capital Theory and Development Planning	<i>R. F. Findlay</i>
The Scope of Qualitative Economics	<i>K. J. Lancaster</i>
Automatic Stabilization and the British Taxes on Income	<i>P. H. Pearce</i>
Admissibility and Measurable Utility Functions	<i>J. P. Quirk and R. Saposnik</i>
The Business Propensity to Save and Size of Firm	<i>P. E. Hart</i>
Cournot Points and the Conflict Curves	<i>O. E. Ferguson</i>

This *Journal* is published three times a year in February, June and October. The annual subscription is 32s. 6d. (U.S.A. & Canada \$5.00), single number 12s. 6d. (U.S.A. & Canada \$2.00). Orders and subscriptions may be sent to any bookseller or direct to:

OLIVER AND BOYD LTD.

Tweeddale Court, 14 High St., Edinburgh 1, Scotland

THE SOUTH AFRICAN JOURNAL OF ECONOMICS

Editors:

W. J. BUSSCHAU

C. S. RICHARDS

H. M. ROBERTSON

(*Managing Editor*)

Vol. 29, No. 3

September 1961

Land Reform in the Bantu Areas and Its Effect upon Urban Labour	<i>D. HOBART HOUGHTON</i>
Review of the Financial and Economic Situation in South Africa	<i>M. H. DE KOCK</i>
John Company at the Cape	<i>MARCUS ARKIN</i>
The Case for Minimum Wage Legislation in South Africa	<i>L. B. KATZEN</i>
Comment	<i>W. F. J. STEENKAMP</i>
Private Enterprise in the Soviet Union	<i>J. S. PRYBYLA</i>

Reviews

Notes and Memoranda

Recent Publications

Editorial communications, contributions (in duplicate), and books for review should be addressed to the Joint Editors, P.O. Box 5316, Johannesburg.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

REVISTA DE ECONOMIA POLITICA

Cuatrimestral.

Consejo de Redacción

Presidente:

Enrique FUENTES QUINTANA

Gonzalo ARNAIZ VELLANDO, Arturo CAMILLERI LAPEYRE, Agustín COTORRUELO SENDA-GORTA, Fabián ESTAPE RODRIGUEZ, Joaquín FERNANDEZ CASTAÑEDA, Javier IRASTORZA REVUELTA, José Mira RODRIGUEZ, Jaun PLAZA FRIETO, Luis A. ROJO DUQUE, FELIPE RUIZ MARTIN, Antonio J. SANCHEZ PEDREÑO, Alfredo SANTOS BLANCO, Juan SARDA DEXEUS, Ramón TRIAS FARGAS, José Luis UGARTE DEL RIO, Manuel VARELA PARACHI, Juan VELARDE FUERTES, Huberto VILLAR SARRAILLET.

Secretario: Angel ALCAIDE INCHAUSTI

SUMARIO DEL NUMERO 31
(Mayo-Agosto de 1962)

L. A. ROJO: El Modelo Neoclásico de Patinkin

SAYERS: El informe Radcliff y la Política Monetaria.

SERRA: El Origen de la Programación Lineal.

ROMÁN PERPIÑA: Una nota bibliográfica.

ESTUDIOS Y DOCUMENTOS DE ECONOMIA ESPAÑOLA

ROMÁN PERPIÑA: Proyecto presentado a la reunión de Comisión Mediterránea sobre desarrollo de la Economía Española.

ESTUDIOS Y DOCUMENTOS DE ECONOMIA EXTRANJERA

Informe de la OECD sobre alza de los precios.

RESEÑA DE LIBROS

Precios de suscripción anual

España	Portugal Iberoamérica Filipinas	Otros países	nº suelto.
150 ptas.	170 ptas.	185 ptas.	70 ptas.

Instituto de Estudios Políticos—Plaza de la Marina Española, 8
MADRID—13 (ESPAÑA)

THE JOURNAL OF FINANCE

Published by THE AMERICAN FINANCE ASSOCIATION

Vol. XVII

March 1962

No. 1

ARTICLES

- Reconciling Internal and External Financial Policies Robert V. Roosa
The Role of Federal Fiscal Policy in the 1957-60 Business Cycle Kenyon E. Poole
Interdependence of the Utility Rate Base Type, Permitted Rate of Return, and the Utility
Earnings David K. Eisteman
Compensatory Cyclical Bank Asset Adjustments Dudley G. Luckett
Interest Rates, Contract Terms, and Allocation of Mortgage Funds Richard Muth
Yields on Recently Issued Corporate Bonds: A New Index Mortimer Kaplan
The Effects of Cash Buying and Credit Buying on Liquid Savings
..... Jacob Cohen and James N. Morgan

COMMUNICATION

- Are Compensating Balance Requirements Irrational?
..... Richard G. Davis and Jack M. Guttentag

Membership dues, including \$3.00 allocated to subscription in *The Journal of Finance*, are \$5.00 annually. Student subscription is \$2.00 a year. Libraries may subscribe to *The Journal* at \$5.00 annually and single copies may be purchased for \$1.25. Applications for membership in the American Finance Association and subscriptions to *The Journal of Finance* should be addressed to the Secretary-Treasurer, Robert A. Kavesh, Graduate School of Business Administration, New York University, 100 Trinity Place, New York 6, New York.

Communications relating to the contents of *The Journal of Finance* should be addressed to the Editor, Harold G. Fraine, Commerce Building, University of Wisconsin, Madison 6, Wisconsin, or to any of the Associate Editors, Lawrence S. Ritter, Graduate School of Business, New York University, New York 6, New York, William W. Alberts, Graduate School of Business, University of Chicago, Chicago 37, Illinois, and Clyde W. Phelps, Department of Economics, University of Southern California, Los Angeles 7, California.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

INTERNATIONAL ECONOMIC REVIEW

Published by the Kansai Economic Federation with the Collaboration of the Wharton School of Finance and Commerce, University of Pennsylvania, and the Institute of Social and Economic Research, Osaka University

Chief Editor: L. R. Klein (University of Pennsylvania)

Co-Editor: M. Morishima (Osaka University)

Volume III

January 1962

Number 1

CONTENTS

Estimation in the Linear Decision Model	W. D. Fisher
Product Mix Alternatives; Flood Control, Electric power, and Irrigation ..	A. S. Manne
Concentration in United States Manufacturing Industry,	S. S. Sanda
Experimental Analysis of a Duopoly Situation from the Standpoint of Mathematical Learning Theory	P. Suppes and J. M. Carlsmith
Balanced Growth and Intertemporal Efficiency in Capital Accumulation	H. Furuya and K. Inada
Allocating Indivisible Resources Affording External Economies or Diseconomies ..	S. Reiter and G. R. Sherman
On Equilibrium Growth of Capital and Labor	H. Neisser
Balanced Growth and a Constant Degree of Employment of Labour: Reply to Professor Neisser	Y. Shinkai

The Review is published fully in English, three times a year. The annual subscription price is \$4.00 per year outside Japan and 1,200 Yen per year in Japan: the price of a single copy is \$1.50 outside Japan, 500 Yen in Japan. Subscriptions outside of Japan should be forwarded to *The International Economic Review*, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia 4, Pa. Subscriptions in Japan should be forwarded to *The International Economic Review*, Kansai Economic Federation, Osaka Building, Soze-cho, Kita-Ku, Osaka, Japan.

Manuscripts for publication should be sent to the chief editor or co-editor of the *Review*.

THE JOURNAL OF INDUSTRIAL ECONOMICS

Board of Editors: P. W. S. Andrews (General Editor), Nuffield College, University of Oxford; Professor M. A. Adelman, Massachusetts Institute of Technology; Professor Joel Dean, Columbia University; Professor P. Sargant Florence, University of Birmingham; Professor R. B. Heflebower, Northwestern University; Professor E. S. Mason, Harvard University; Professor T. Wilson, O.B.E., University of Glasgow.

Volume X, No. 2, March, 1962

Louis Phillips	Common Markets: Towards a Theory of Market Integration.
P. H. Frankel	The Significance of Marginal Capacity in the Oil Industry.
David Granick	Functional Divisions of Company Management: A Reflection of National 'Styles.'
P. C. Webb and G. E. Wheeler	'Operation Taurus': A Business Game Designed for the Building Industry.
P. J. Donnelly and Richard H. Holton	A Note on Product Differentiation and Entertainment Expense Allowances in the United States.
T. A. B. Corley	How do Business Men Plan Production? A Case Study of the Radio and Television Industry 1951-60.
Charles F. Phillips, Jr.	Government Promotion of Monopoly Power: A Comment.
Stanley E. Boyle	Competition in the Synthetic Rubber Industry: A Comment.

This Anglo-American journal is essentially devoted to the economic problems of industry and commerce. Its contributors are business men, economists engaged in industry, and specialist academic industrial economists. The Journal is published three times a year. MSS from the United States should be sent to Professor Adelman at the Massachusetts Institute of Technology; and from other countries to the General Editor, Nuffield College, Oxford. The annual subscription is \$4.20 (30 shillings) post free; single copies \$1.90 (thirteen shillings and sixpence) post free. Remittances should be sent to the publisher by personal cheque.

Published by
BASIL BLACKWELL • OXFORD, ENGLAND

Please mention *THE AMERICAN ECONOMIC REVIEW* When Writing to Advertisers

*The College Department
Of Rand McNally Announces*

**MONEY, BANKING,
AND PUBLIC POLICY**

by **HAROLD BARGER** • *Columbia University*

Carefully organized and well-written, this text treats fully all topics necessary for a firm foundation in understanding contemporary banking. The author's fresh approach includes such timely and important additions as discussion of banking in other countries and the monetary aspects of the business cycle. His classroom experience offers the student a more balanced, integrated and thought-provoking treatment of theory, description, and policy than any previous text.

FOUR OUTSTANDING FEATURES OF THIS NEW TEXT ARE:

1. A lucid description of bank and nonbank financial institutions, of the way they operate, and of policy problems connected with their regulation.
2. A compact, yet up-to-date and well-balanced account of monetary and fiscal theory. This account proceeds step by step with ample arithmetical and graphical illustrations, free from frills, and gives the student the basic understanding he needs for the discussion of policy problems.
3. A systematic discussion of the major policy issues of our time in a relevant historical setting. The potentialities of monetary and fiscal policy are appraised in relation to growth, unemployment, inflation and the gold problem.
4. A comprehensive treatment of contemporary banking with less emphasis on the extraneous details of banking history which plague the ordinary text.

1962 6 x 9 inches 714 pages \$7.00 list

Instructor's Manual available



for approval copies write:
College Department

RAND MCNALLY & COMPANY
P.O. Box 7600, Chicago 80, Illinois

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers



Economics in Perspective

from Holt, Rinehart and Winston

PRINCIPLES OF ECONOMICS

C. E. Ferguson and Juanita M. Kreps, both of Duke University

Aware of recent governmental and academic concern over economic growth and inflation, Professors Ferguson and Kreps have shifted the usual textbook emphasis to these problems. Their book is organized around the three currently dominant national objectives; (1) a relatively stable price level, (2) full and stable employment, (3) continued growth of per capita output. In addition to traditional materials, the authors extensively discuss such newer devices and problems as cost-push inflation, national wage policy, non-profit maximizing theory, input-output, and gold outflow. This clearly written book is designed for a one-year introductory course. Over 150 color illustrations. *March 1962, 800 pp., \$8.00 tentative*

ECONOMIC PERFORMANCE

An Introduction to Economics

Henry H. Villard, City College of New York

An unconventional and unique approach to the understanding of basic economic issues. How economies perform and the reasons for their individual stages of achievement: these are the major themes. Today's various economic systems—advanced and underdeveloped, enterprise and collectivist—are given careful attention. Includes estimates of waste due to malperformance both in achieving full employment and in economizing, and summaries of possible improvements in existing economies. *1961. 672 pp., \$6.50*

NATIONAL INCOME

Its Measurement, Determination and Relation to Public Policy

Sam Rosen, University of New Hampshire

An upper-division and first year graduate text in macroeconomics and social accounting containing sections on income accounting, determination, and policy. Includes such new devices as input-output, balanced budget multiplier, flow of funds, national balance sheets, and Phillips curve. *Aug. 1962, 450 pp., \$7.00 tentative*

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

From Harcourt, Brace & World

THE DOLLAR IN CRISIS

Edited, with an introduction,
by SEYMOUR E. HARRIS, *Lucius Littauer*
Professor of Political Economy, Harvard University

Thirteen foremost authorities in international economics analyze the crucial dollar and gold problem in this new and thorough paperback study. Nearly all the essays were especially commissioned for this book; they present influential, often conflicting points of view and provide the kind of contemporary interpretations that are suitable for a variety of courses in economics. 309 pages, \$3.45

UNIONS, MANAGEMENT, AND THE PUBLIC: Second Edition

E. WIGHT BAKKE, *Yale University*
CLARK KERR, *University of California*
CHARLES W. ANROD, *Loyola University, Chicago*

A comprehensive, up-to-date collection of classical and modern readings, with editorial commentary, covering the entire industrial relations field, its problems and policies. Three-fourths of this edition consists of new materials. "This revision maintains the same high quality which the first edition had, and I consider it one of the outstanding books of readings in industrial relations now available."—CHARLES A. MYERS, Massachusetts Institute of Technology. *An Instructional and Study Guide accompanies this text.* 650 pages, \$6.95

CONCEPTS AND CASES IN ECONOMIC ANALYSIS

AARON W. WARNER, *Columbia University*
VICTOR R. FUCHS, *New York University*

The emphasis throughout this text-casebook is on the proper use of concepts and tools of economic analysis in specific situations. The illustrative materials—188 cases in all—are extracted from many sources, including newspaper items, reports of congressional hearings, articles from professional journals and quotations from classic economic literature. This range of selections is designed to give the student a firm foundation for understanding economic theory and for solving economic problems. *Paperbound, 288 pages, \$3.00*

An Instructor's Key is available.

Books for Courses in Economics

ECONOMIES OF THE WORLD TODAY

CLAIR WILCOX, *Swarthmore College*

HOLLAND HUNTER, *Haverford College*

WILLIS D. WEATHERFORD, *Swarthmore College*

This new paperback supplement for the introductory course offers an illuminating assessment of five major economies—the Soviet Union, Great Britain, Communist China, India and the United States. These economies are discussed in terms of their actual goals, rather than in terms of the ideological justification they adopt. The authors explore the ways economies are organized, the various rates of economic growth and development, and the quality of each economy's performance. They also provide incisive analyses of such topics as individualism and collectivism, market economies, command economies, and those economies that are now either initiating development or have attained maturity. *April publication, 144 pages, probable price: \$1.50*

ECONOMICS AND THE MODERN WORLD

LAWRENCE ABBOTT, *Union College*

Here for the principles course is a text that takes a problem-centered approach to economic principles, interweaving facts and theory and presenting a clear treatment of the concepts, techniques and laws of economics as they relate to the modern world. "The strong points are its excellent treatment of interest theory; a realistic treatment of imperfect competition and the integration in presentation of micro-macro theory. . . . In my opinion, this book is the best principles book on the market today."—GEORGE R. GREEN, University of Pennsylvania. *Student Guide & Workbook and an Instructor's Manual are available. 880 pages, \$7.50*

Examination copies upon request.



HARCOURT, BRACE & WORLD, INC.
750 Third Avenue, New York 17, New York
1855 Rollins Road, Burlingame, California

A special offer . . .

. . . \$5.50

for all four publications in the series of Merrill Foundation Studies in Business Expectations and Planning.

- | | |
|--|--------|
| No. 1. The Railroad Shippers' Forecasts, by Robert Ferber | \$1.00 |
| 2. Determinants of Capital Expenditures, by Robert Eisner | 1.50 |
| 3. Employers' Forecasts of Manpower Requirements, by Robert Ferber | 1.50 |
| 4. Role of Anticipations and Plans in Economic Behavior and Their Use in Economic Analysis and Forecasting, by Franco Modigliani and Kalman J. Cohen | 2.75 |

These monographs represent a major effort devoted to the compilation of data providing direct evidence on the influence of businessmen's expectations on economic developments. The data have been analyzed with a view toward testing their usefulness in understanding economic behavior and in forecasting general economic activity or components thereof.

Copies may also be ordered individually at the prices indicated.

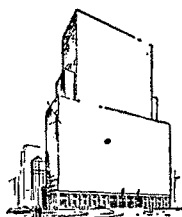
Bureau of Economic and Business Research

University of Illinois

Box N, Station A

Champaign, Illinois

Announcing
four
Graduate Fellowships
in
Business Administration
and
Agricultural Economics



Dear Professor and Administrator:

For the academic year 1962-1963 four full tuition plus \$100 per month stipend graduate fellowships are being offered by CONTINENTAL GRAIN COMPANY at each of the following four universities: Kansas State, Minnesota, Northwestern and Wharton at Pennsylvania. Two are in agricultural economics and two in business administration.

When you have occasion to advise your students about graduate training you may want to call their attention to these grants.

CONTINENTAL GRAIN COMPANY is happy to help make available the advantages of higher education to qualified young people who may not otherwise be able to pursue graduate study.

Bulletin board posters and wallet-size folders are available which provide details concerning these fellowships. Address Mr. Peter Mendelssohn, Vice President for Personnel Administration.

Most cordially,

Michael W. Burg
PRESIDENT

CONTINENTAL GRAIN COMPANY 2 Broadway, New York 4, N. Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

TWO IMPORTANT TITLES

PREFACE TO ECONOMETRICS

by Michael J. Brennan, Jr., Brown University

This book provides an introduction to quantitative methods that can be understood by the undergraduate. The text material is as nontechnical as possible within limits of precision and accuracy, especially in the early chapters. Each new subject is introduced gradually to give the student time to digest the new learnings before taking up additional ones. Emphasis is placed on applications of economic theory, quantitative measurement, and tests of correctness of theory. An extensive group of problems is included at the end of each chapter.

BUSINESS CYCLES AND FORECASTING

2nd Edition—By Carl A. Dauten, Washington University

Attention to current trends in education for business is reflected in this revision. This new book provides an analytical presentation of cycle theory, forecasting problems, and policies for economic stability. Alternate business cycle theories are presented without critique. Keynesian theories are analyzed and then used in the description of the cyclical processes. Six new chapters are included in the second edition.

SOUTH-WESTERN PUBLISHING CO.

(Specialists in Business and Economic Education)

Cincinnati 27 New Rochelle, N.Y. Chicago 44 Burlingame, Calif. Dallas 2

The Real National Income of Soviet Russia Since 1928

By Abram Bergson. "A long, scholarly probe into raw data on Russian production and distribution shows that USSR's economic advances have been real indeed—although not quite as earthshaking as the Kremlin would have us believe."—*Saturday Review*.

"Professor Bergson's findings are the result of an exhaustive study of Soviet statistical methodology with exacting corrections for accuracy . . . a much needed addition to the factual findings on the Soviet Union . . . providing the student of Soviet affairs with valuable benchmarks."—*Christian Science Monitor*.

Attention is focused on the period of the plans to 1955. For these years the calculations provide the basis for a systematic reappraisal of the Soviet achievements. An attempt is also made to compare economic trends in the USSR with those in the USA. Finally, implications are considered for Russia's future progress.

A RAND Corporation Research Study

\$8.75

Economic Redevelopment in Bituminous Coal

THE SPECIAL CASE OF TECHNOLOGICAL ADVANCE IN UNITED STATES COAL MINES, 1930-1960

By C. L. Christenson. The coal industry has undergone a basic revision since World War II. Mr. Christenson examines the impact of advancing technology upon the employment and earnings of the miners themselves, and seeks to define the relation between changes in coal consumption and the great technological progress in coal mining during recent years.

\$7.50

Trade Union Officers

A STUDY OF FULL-TIME OFFICERS, BRANCH SECRETARIES AND SHOP STEWARDS

By H. A. Clegg, A. J. Killick, and Rex Adams. This is a detailed study of the problems of recruitment and procedure which have become matters of major importance to trade union officers in England.

\$6.00

HARVARD UNIVERSITY PRESS

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

The Economics of Defense in the Nuclear Age

By C. J. Hitch and R. N. McKean. "Many keen insights and fine details as well as a masterful treatment of the larger issues. It raises the right questions and suggests answers to provide the basis for future improvements in policy."—*American Political Science Review*. \$9.50

The Corporation in Modern Society

Edited by Edward S. Mason. "The best body of material on the American corporate system yet offered."—A. A. Berle, Jr. \$6.75

The Diplomacy of Economic Development

By Eugene R. Black. Mr. Black describes the "revolution of rising expectations" in underdeveloped countries and shows why rich countries should use some of their wealth to influence its outcome. \$3.00

Potentials of the American Economy

ESSAYS OF SUMNER SLICHTER

Edited by John T. Dunlop. Discussions of lasting significance are arranged in four groups: American Economy, Economic Fluctuations, Labor-Management, Labor Economics. \$7.50

A History of Lay Judges

By J. P. Dawson. Exploring the divergence of legal systems, Mr. Dawson shows how French suppression and English preservation of local government have affected modern European patterns. \$6.50

The Charles Ilfeld Company

A STUDY OF THE RISE AND DECLINE OF
MERCANTILE CAPITALISM IN NEW MEXICO

By William J. Parish. A pioneering study of far western commercial enterprise from Santa Fe Trail days to the present. \$10.00

THE THEORY OF ECONOMIC DEVELOPMENT

AN INQUIRY INTO PROFITS, CAPITAL, CREDIT,
INTEREST, AND THE BUSINESS CYCLE

By Joseph A. Schumpeter. The sixth printing of an economic classic. \$5.00

MONETARY PROBLEMS OF AN EXPORT ECONOMY

THE CUBAN EXPERIENCE, 1914-1917

By Henry C. Wallich. Timely background reading for the problems of the hemisphere's most sensitive area. \$6.00



● ● ● ● ● **WADSWORTH**
● ● ● ● ● **ANNOUNCES**

ECONOMICS IN ACTION, 2ND EDITION
Readings in Current Economic Issues

Shelley M. Mark, University of Hawaii and Daniel M. State, Michigan State University

The revised 1962 edition of this highly successful and provocative collection of readings on the crucial and controversial issues of economic policy places specific emphasis on the issues which will be important during the sixties. The divergent points of view show the process of deliberation that precedes policy formation and how these points of view may be reconciled in a private enterprise economy. Paperbound 504 pages \$3.95

ELEMENTARY MATHEMATICS OF PRICE THEORY

Clark Lee Allen, Southern Illinois University

This is a new and important book designed and class tested as a supplement to standard texts in price theory. It provides a clear and understandable terms the mathematics necessary for price theory for even the non-mathematical economist. Progressing from a simple treatment of graphs and functions to more complex problems in partial derivatives, maxima and minima and homogeneous functions, the book is at once a text and a workbook. Introduction to indifference curves, isoquants, and linear programming is presented in terms that make this book also ideal as a text for an introductory mathematical economics course. Paperbound 176 pages \$3.95

ECONOMIC DEVELOPMENT: The Underdeveloped World and the American Interest

Walter Krause, State University of Iowa

This stimulating, informative, and provocative book deals with the problems of economic development in the underdeveloped portions of the world, both from the standpoint of the underdeveloped countries themselves and from the American interest in this problem. ECONOMIC DEVELOPMENT is a guide to public policy that will well serve students, teachers, and others seriously interested in creative economic policy. Clothbound 538 pages \$8.50

READINGS IN ECONOMIC DEVELOPMENT

Theodore Morgan and George W. Betz, University of Wisconsin, and Nanda K. Choudhry, University of Rochester

Available Summer, 1962

For information write Box JM

● ● ● ● ● **WADSWORTH**
PUBLISHING CO.
BELMONT, CALIF. ● ● ●

OXFORD BOOKS

OF EXCEPTIONAL INTEREST

DISTRIBUTION IN GREAT BRITAIN AND NORTH AMERICA

A Study in Structure and Productivity

By LADY MARGARET HALL, CHRISTOPHER WINSTEN, and JOHN KNAPP. A large amount of clear, interesting text surrounds the many statistical tables that this work uses to record the relative selling efficiency of shops and chain stores in the United States, Canada, and Great Britain. Sales and sales percentages per persons employed are compared: by employees per shop; by shops in a chain; by regions, etc. \$10.10

UNITED STATES FISCAL POLICY, 1945-1949

Its Contribution to Economic Stability

By A. E. HOLMANS. An English economist who spent a year in this country analyzes recent American fiscal policy and its effect upon our economy and stability from both the "inside" and the "outside." He discusses the strengths of our policy and what seem to him its foibles with equal thoroughness, concluding with a treatment of the recession and recovery of 1957-59. \$6.40

PARLIAMENT AND PUBLIC OWNERSHIP

By ALBERT HENRY HANSON. A lucid examination of the complex problem of parliamentary "control" of nationalized industry without undue bureaucratic loss of economic efficiency and with maximum retention of parliamentary democracy and the rights of the individual. \$4.80

all bookstores

OXFORD UNIVERSITY PRESS, New York 16



A TEXT FROM A·C·C

FOR STUDENTS OF ECONOMICS AND BUSINESS

ELEMENTS OF MODERN STATISTICS

by BOYD L. NELSON, *University of Maryland*

This text provides students of business and economics with sufficient knowledge to apply statistics, to understand their power and usefulness, and to realize their limitations. The book accomplishes this by emphasizing statistical concepts, statistical influence, and the pervasiveness of sampling. 366 pages, illustrated, \$6.00

An unusually good elementary text. It is well organized and has a good elementary treatment of statistical theory without an excess of descriptive materials. Roger L. Burford, Georgia State College of Business Administration

Appleton-Century-Crofts, Inc. • 34 West 33rd Street, N.Y. 1

THE DEPARTMENT OF ECONOMICS of the UNIVERSITY OF COLORADO

announces its course offerings for the
1962 Summer Session

First 5-Week Term (June 15-July 20)

- Econ. 151—Economic History of the Western World I
- Econ. 201—Principles of Economics I
- Econ. 202—Principles of Economics II
- Econ. 407—Intermediate Economic Theory I
- Econ. 421—Public Finance I
- Econ. 441—International Trade
- Econ. 462—Economics of Collective Bargaining
- Econ. 463—Social Security
- Econ. 501—Contemporary Economic Theory I
- Econ. 577—Economic Planning and Development

Second 5-Week Term (July 23-August 24)

- Econ. 152—Economic History of The Western World II
- Econ. 202—Principles of Economics II
- Econ. 408—Intermediate Economic Theory II
- Econ. 452—Economic History of the United States
- Econ. 471—Comparative Economic Systems
- Econ. 481—Economic Statistics
- Econ. 484—Mathematics and Statistics for Economists
- Econ. 510—History of Economic Thought
- Econ. 548—Seminar in Linear Programming
- Econ. 590—Seminar in Economic Problems

For a complete Bulletin, address Dean of the Summer Session
McKenna Building 6213, University of Colorado, Boulder, Colorado

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Address

A New Basic Text for Introductory Economics

ECONOMICS

Principles and Issues

By Delbert A. Snider, Professor of Economics, Miami University

A genuinely new approach to the study of economic principles is provided in this new basic text, but within the framework of the traditional content of a principles course. Each theoretical concept or principle is developed with the idea in mind of making it easy for the student to see its relevance to real-world problems and issues. The treatment is rigorous without being pedantic.

To accompany Snider's *Economics: Principles and Issues* a student *Workbook* prepared by Professor Wallace I. Edwards of Miami University will be available. It will contain material to assist the instructor in getting over important points to the student.

For Courses in Labor Economics

LABOR ECONOMICS

By Chester A. Morgan, State University of Iowa

In this new basic text for courses in labor economics or labor problems, the material is organized in a connected, continuous, and concise presentation. To assist in student understanding each chapter concludes with a summary which emphasizes the important points in the chapter.

WRITE FOR EXAMINATION COPIES

Published in The Dorsey Series in Economics

Consulting Editor: Emanuel T. Weiler, Purdue University



THE DORSEY PRESS, INC.

HOMewood, ILLINOIS

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

A MESSAGE FROM McGRAW-HILL

One of the many changes in college and university education in recent years is the increasingly wide availability and use of non-required books, from quality paperbacks to large reference books. A key element in the development of book-centered campuses is the part played by college bookstores in stocking and displaying these books. When a college store carries such paperbacks as Heilbroner's *THE WORLDLY PHILOSOPHERS* or such reference sets as Schumpeter's *BUSINESS CYCLES*, it is exposing serious students to important works in their fields that go beyond the limits of their normal textbook reading. We urge you to support your local college store and we are urging all stores to carry adequate stocks of non-required books in all areas of economics and business administration. Some of our own titles are listed on these pages.

Economics

Robert J. Alexander: *LABOR RELATIONS IN ARGENTINA, BRAZIL, AND CHILE*. 432 pages, \$8.95

Gerald B. Bailey and Ralph Presgrave: *BASIC MOTION TIMESTUDY*. 195 pages, \$5.00

Diran Bodenhorn: *INTERMEDIATE PRICE THEORY*. 318 pages, \$6.75

Valdemar Carlson: *ECONOMIC SECURITY IN THE UNITED STATES*. *Economic Handbook Series*. Available April

W. Harrison Carter and William P. Snavely: *INTERMEDIATE ECONOMIC ANALYSIS*. 423 pages, \$6.95

Neil W. Chamberlain: *THE FIRM: Microeconomic Planning and Action*. 448 pages, \$7.95

Thomas F. Dernberg and Duncan M. McDougall: *MACRO-ECONOMICS: The Measurement, Analysis, and Control of Aggregate Economic Activity*. 267 pages, \$6.50

Roy A. Foulke: *PRACTICAL FINANCIAL STATEMENT ANALYSIS*, *New Fifth Edition*. *McGraw-Hill Accounting Series*, 736 pages, \$8.95

Alan S. Manne: *ECONOMIC ANALYSIS FOR BUSINESS DECISIONS*. 177 pages, \$6.95

Campbell R. McConnell: *ELEMENTARY ECONOMICS: Principles, Problems and Policies*. 800 pages, \$6.95

send for approval copies

McGRAW-HILL BOOK COMPANY, INC.
330 West 42nd Street New York 36, N.Y.

Paul A. Samuelson: **ECONOMICS: An Introductory Analysis, Fifth Edition.** 855 pages, \$7.50

Jan Tinbergen and H. C. Bos: **MATHEMATICAL MODELS OF ECONOMIC GROWTH. Economic Handbook Series.** 144 pages, \$6.90

Money and Banking

Walter W. Haines: **MONEY, PRICES, AND POLICY.** 824 pages, \$7.95

Paul B. Trescott: **MONEY, BANKING, AND ECONOMIC WELFARE.** 578 pages, \$7.50

Management

Keith Davis: **HUMAN RELATIONS AT WORK, Second Edition. McGraw-Hill Series in Management.** Available May.

Lyman Keith and Carlo E. Gubellini: **INTRODUCTION TO BUSINESS ENTERPRISE.** Available April

Rensis Likert: **NEW PATTERNS IN MANAGEMENT.** 288 pages, \$6.95

Raymond R. Mayer: **PRODUCTION MANAGEMENT.** 720 pages, \$8.95

Charles R. Walker: **MODERN TECHNOLOGY AND CIVILIZATION: An Introduction to Human Problems in the Machine Age.** 480 pages, \$7.50 (cloth), \$4.75 (paper)

Insurance

Charles C. Center and Richard M. Heins: **INSURANCE AND GOVERNMENT. McGraw-Hill Insurance Series.** 496 pages, \$9.95

Edwin J. Faulkner: **HEALTH INSURANCE. McGraw-Hill Insurance Series.** 656 pages, \$8.75

Joseph B. Maclean: **LIFE INSURANCE, Ninth Edition. McGraw-Hill Insurance Series.** 640 pages, \$7.95

Albert H. Mowbray and Ralph J. Blanchard: **INSURANCE: Its Theory and Practice in the United States. McGraw-Hill Insurance Series.** 608 pages, \$7.50

Real Estate

Richard U. Ratcliff: **REAL ESTATE ANALYSIS.** 342 pages, \$7.50

Willis R. Bryant: **MORTGAGE LENDING, Second Edition.** Available May

Statistics

Robert Schlaifer: **INTRODUCTION TO STATISTICS FOR BUSINESS DECISIONS.** 382 pages, \$7.75. **PROBABILITY AND STATISTICS FOR BUSINESS DECISIONS.** 732 pages, \$11.50

Lionel Weiss: **STATISTICAL DECISION THEORY. McGraw-Hill Series in Probability and Statistics.** 208 pages, \$7.50

Taxation

Dan Troop Smith: **FEDERAL TAX REFORM: The Issues and a Program.** 338 pages, \$7.00

send for approval copies

McGRAW-HILL BOOK COMPANY, INC.

330 West 42nd Street

New York 36, N.Y.

Coming in June—an important new text

MAIN CURRENTS IN MODERN ECONOMICS

Economic Thought Since 1870

By Ben Seligman

A critical and penetrating review of the development, content, and relevance of contemporary economic thought. Mr. Seligman examines all the major figures and theories—from the socialist, marginalist, and historical economists of the nineteenth century to contemporary efforts in game theory, linear programming, input-output analysis, and welfare economics. A lively yet scholarly work, this is the only systematic survey of modern economic thought now available. **\$11.75**

TECHNIQUES OF TREASURY DEBT MANAGEMENT

By Tilford C. Gaines. A complete analysis of the debt-financing techniques of the Treasury, with specific recommendations for their more efficient management in the future. *May.* **\$7.50**

available upon request:

Catalogue of publications in economics, business and labor relations

THE FREE PRESS OF GLENCOE

A Division of the Macmillan Company

60 Fifth Avenue, New York

BOOKS FROM



Publishing Company
64 East Van Buren Street
Chicago 5, Illinois

A DOCUMENTARY HISTORY OF AMERICAN ECONOMIC POLICY SINCE 1789, *edited by William Letwin, M.I.T.*

These documents reflect the great issues of our economic life, from Hamilton's *Report on Manufactures* to key papers on the N.R.A. They are coherent, self-contained, free of technical jargon, and show how each problem was treated while it was politically urgent. An interesting and useful introduction to the immediate relevance of economic argumentation. *An Aldine Library Edition; clothbound, 436 pp., \$7.50.*

INTERNATIONAL BIBLIOGRAPHY OF ECONOMICS

An annual list of all important contributions, from all countries, in all languages, and whatever the form in which they appear. It classifies (under 600 subject headings) books, articles from over 1,500 periodicals, and many fugitive governmental reports. Sponsored by UNESCO and prepared by the International Committee for Social Sciences Documentation; Vol. IX, for 1960, is now available. *Annual subscription, clothbound, 550 pp., \$10.00.*



Harper Proudly Announces

Bayard O. Wheeler's

BUSINESS AN INTRODUCTORY ANALYSIS

Here is a comprehensive view and analysis of American business viewed in the aggregate and in detail. The various subjects discussed are integrated through the concept of business as an interrelated system in which business firms use basic resources under the guidance of management and under the influence of social forces to accomplish objectives. Within the business system, the management and functions of the firm as the primary operating unit are described and analyzed, including a complete case history of a firm, 100 diagrams and original illustrations. March 15. 643 pp. + Index. \$7.50.

Eugene E. Jennings'

THE EXECUTIVE *Autocrat, Bureaucrat, Democrat*

Describing the crucial characteristics of the executive role today, this informative volume takes account of the fact that the most important view that the executive has is his view of what exactly constitutes the executive's role. The author describes three common executive views—autocratic, bureaucratic, and democratic—with many illustrations from business and government. The executive's problem is what ingredients from each to select in order to make an effective executive style. Coming in July.

And Keep These Fine Harper Texts in Mind

THE ECONOMICS OF MONEY AND BANKING, 3rd Ed. •
Chandler

BUSINESS FLUCTUATIONS, 2nd Ed. • Gordon

**MICROANALYSIS OF SOCIOECONOMIC SYSTEMS: A Simulation
Study •** Orcutt, Greenberger, Korbel, & Rivlin

ECONOMIC DEVELOPMENT: Analysis and Case Studies •
Pepelasis, Mears, & Adelman

NATIONAL INCOME: STATICS AND DYNAMICS • Henderson

LABOR PROBLEMS AND PROCESSES: A Survey • Tripp

COMPARATIVE ECONOMIC SYSTEMS, 6th Ed. • Loucks

GOVERNMENT AND BUSINESS, 3rd Ed. • Mund

FINANCIAL PLANNING AND POLICY • Walker & Baum

HARPER & BROTHERS 49 E. 33d St., N.Y. 16, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

New From Lippincott:

INTERMEDIATE ECONOMIC THEORY

by

George Malanos

A clearly written presentation of neoclassical economic theory for courses in Economic Theory, Price Theory, and Micro-Economic Theory. Self-consistent theorems clarify and simplify the student's examination of economic systems. Amply supplemented with charts, graphs, and bibliographies.

540 pp.

\$6.50

J. B. LIPPINCOTT COMPANY

East Washington Square, Philadelphia 5, Pa.

MARKETING RESEARCH MANAGER

To join expanding Marketing Planning Division at AIRLIFT CENTER, U.S.A., located at Marietta, Georgia, eight miles from Atlanta.

Applicant's background ideally should include a B.S. degree in Aeronautical, Mechanical, Electrical Engineering or related field and Ph.D. degree in Economics, Statistics or related field and eight to ten years research and/or industrial experience, with Airlines, Air Force or Air Cargo Industry preferred.

This position offers an unusual opportunity to join an expanding Marketing Planning Division, to work in an exciting professional environment, and to enjoy the cultural, educational and climatic advantages of the metropolitan Atlanta area.

Write full details of training and experience to: Dr. Karl M. Mayer, Director of Marketing Planning, Lockheed-Georgia Company, Department VV-92, 834 West Peachtree Street, Atlanta 8, Georgia.

An Equal Opportunity Employer

LOCKHEED-GEORGIA COMPANY

A Division of Lockheed Aircraft Corporation

NEW Economics Texts

from P-H

An Introduction to Econometrics

by **LAWRENCE R. KLEIN**, Wharton School, University of Pennsylvania

Here is a new book that brings econometrics within the reach of students and professional economists who have previously lacked the necessary background in mathematics. It is simultaneously suited to the beginning student who intends to make econometrics his specialty. The author gives the student a thorough appreciation of the subject by covering the main areas of applications in econometrics—demand analysis, production functions, cost functions, distribution of income, etc. He offers methods from an elementary viewpoint by critically examining these areas of application. And he bases much of his approach on the work of the great pioneers in econometrics—Schultz, Douglas, Dean, and others.

Klein uses a light mathematical approach—the only prerequisite being pre-college mathematics. He employs many examples from actual econometric studies using intuitive and illustrative reasoning. Problems are also included.

March, 1962

Approx. 288 pages

Text price: \$7.50

MATHEMATICS FOR ECONOMISTS: **An Elementary Survey**

by **TARO YAMANE**, New York University

Stressing clarity, this new text enables students to read mathematically oriented literature. It offers students in economics courses a wide variety of topics in mathematics, carefully selected to suit the particular needs of economists. Thoroughly covered are: set theory, calculus, differential and difference equations, vectors and matrices, probability, statistics, and game theory.

April, 1962

Approx. 544 pages

Text price: \$8.75

PUBLIC UTILITY ECONOMICS

by **PAUL J. GARFIELD**, Economist, Foster Associates, Inc., Wash., D.C., and **WALLACE F. LOVEJOY**, Southern Methodist University

Offers economic considerations bearing on the regulation of public utility which governs the prices, services, and profits of the second largest U.S. industry—Public Utilities.

Forthcoming

Price to be announced

For your basic courses in Economics—

ECONOMICS, 3rd

An Introduction to Analysis and Policy

by **GEORGE LELAND BACH**, Carnegie Institute of Technology

This revision, like the popular earlier editions, provides the student with the ability to use economic analysis as a major tool in reaching independent, well-constructed judgments on important public policy issues. Outstanding features include: a rigorous and thorough theory, appendices on "current research," a chapter on managerial economics, material on modern business pricing practices, and the sections—Concepts to Review and Remember.

1960

848 pages

Text price: \$7.50

WORKBOOK IN ECONOMICS

by **MYRON L. JOSEPH**, **NORTON C. SEEBER**, and **GEORGE LELAND BACH**, all at Carnegie Institute of Technology

The WORKBOOK is organized into groups of questions and problems by degrees of complexity and depth to aid the student progressively in his study of economic analysis and policy. It is designed to parallel Bach's ECONOMICS, 3rd, but may also be used well with other texts. Answers to WORKBOOK questions are available upon adoption.

1960

224 pages

Text price: \$2.95

SELECTED READINGS IN ECONOMICS, 2nd

edited by **C. LOWELL HARRISS**, Columbia University

The new edition, containing over ninety readings, supplements your text and lectures on the principles of economics. The readings do not duplicate any textual discussion, they extend it. The editor has chosen a wide variety of readings to introduce the student to the classics, to some of the great economists, to outstanding sources of material, and to new ideas not always included in the average text.

February, 1962 Approx. 512 pages Paperbound Text price: \$3.95

CASES AND PROBLEMS IN ECONOMICS

by **JAMES S. DUESENBERY**, Harvard University, and **LEE PRESTON**, University of California at Berkeley

Supplementing any standard text, this book covers the application of general economic principles, plus detailing the actual processes involved in computing taxes, interest, parity prices, and index numbers. The student can learn specifically by computing, diagramming, explaining, recommending, and solving. A Solutions Manual is available upon adoption.

1960

195 pages

Paperbound

Text price: \$3.25

THE AMERICAN ECONOMY:

Its Origins, Development and Transformation

by **F. A. J. JOHNS**, Johns Hopkins University, and **BERNARD E. JOSS**, New York University

Here is a book that integrates basic economic principles with economic history. It features: clear distinction between growth, development, and transformation—thoroughly correlated chapters—and a bright format using color throughout.

1960

465 pages

Text price: \$5.75

Outstanding Additional Works from P

ECONOMIC THEORY AND OPERATIONS ANALYSIS

by **WILLIAM J. BAUMOL**, Princeton University

An introduction to the tools, results and reasoning of economic theory which takes the student to its frontiers. The text includes conventional micro-economic analysis, the major areas of mathematical economics (most theorems described intuitively), and indicates how this theoretical analysis is applied to business problems via operations research. In the Prentice-Hall International Series in Management.

1961

438 pages

Text price: \$7.50

THE ECONOMIC GROWTH OF THE UNITED STATES (1790-1860)

by **DOUGLASS C. NORTH**, University of Washington

A new approach to the economic history of the U.S., this study has consolidated theory, statistics, and history. The study, in this manner, provides an analytical framework for examining economic growth with specific application to the U.S., and broader implications for the study of economic growth in general. The framework allows for the development of important new statistical data which are used to test hypotheses in this text. The major theme of the book is the influence of American foreign trade and shipping on the growth of the economy.

1961

304 pages

Text price: \$6.75

THE MEASUREMENT OF SOCIAL WELFARE

by **JEROME ROTHENBERG**, Northwestern University

What should be the criterion by which social welfare is measured? In answering this question, the author analyzes present difficulties and examines, in detail, psychology and social sciences from an economics viewpoint. The purpose of the examination and analysis is to find ways the welfare economics can be made useful. The author presents a new approach to the field based on empirical findings about group census.

1961

357 pages

Text price: \$7.95

MONEY, DEBT AND ECONOMIC ACTIVITY, 3rd

by **ALBERT GAILORD HART** and **PETER B. KENEN**,
both at Columbia University

A systematic account of American monetary arrangements, the theory of money and the relationship of money to economic instability. The text covers banking organization and operations, non-bank credit institutions and public debt, business fluctuations, international monetary relations and economic stabilization problems.

1961

512 pages

Text price: \$7.95

P-H Paperbacks in Economics

MONEY AND CREDIT

Their Influence on Jobs, Prices, and Growth

The Report of the Commission on Money and Credit

This report presents the first complete study of American economic goals and financial institutions since the Aldrich Report of 1908. It is a complete, impartial report focusing on three major economic goals for the U.S.: a low level of unemployment, price stability, and a higher rate of economic growth. The Report concludes almost three years of research, study, and discussion by the Commission, which consists of 25 distinguished executives from financial, industrial, and labor groups.

1961 256 pages Paperbound Text price: \$2.00

The Research Monographs which contributed to MONEY AND CREDIT, will soon be available.

WHAT PRICE ECONOMIC GROWTH?

edited by KLAUS KNORR and WILLIAM J. BAUMOL,
both at Princeton University

Here is a book for all readers who are concerned with these questions—Is economic growth compatible with our free enterprise system? Must government regulation be increased? How can we avoid unemployment? This book looks at the real costs and problems of a growth program vital to American politics and our international position.

1961 174 pages (S-11)

SPECTRUM  Paperback: \$1.95 Clothbound Edition: \$3.95

REVOLUTION, EVOLUTION, AND THE ECONOMIC ORDER

by ALLEN M. SIEVERS, University of Florida

A roundtable report on the economic and social crisis confronting the U.S. today, by way of "dialogues" between eminent American economists. Sharp contrasts of views are drawn from the works of Alois, Schumpeter, Galbraith, Hansen, Clark, Keynes, and author Sievers.

February, 1962 Approx. 192 pages (S-23)

SPECTRUM  Paperback: \$1.95 Clothbound Edition: \$3.95

For approval copies, write to:

PRENTICE-HALL, INC., Englewood Cliffs, New Jersey

Princeton

UNIVERSITY
PRESS

Capital in the American Economy: Its Formation and Financing

By Simon Kuznets

An examination of long-term trends in capital formation and financing in the United States, this study is organized primarily around the principal capital-using sectors of the economy. The analysis summarizes major trends in real capital formation and financing, and the factors that determined the trends. The significance of these factors for the future is studied. The book concludes and summarizes the findings of the National Bureau of Economic Research's study of capital formation and its financing, begun in 1950. *Published for the National Bureau of Economic Research.*

694 pages. \$12.00

The Share of Top Wealth-Holders in National Wealth

By Robert J. Lampman

This book offers estimates on how many living persons hold wealth above the minimum specified for filing of federal estate tax returns. These, along with estimates of aggregate national wealth, are used to develop a statement concerning changes in the concentration of wealth-holding between 1922 and 1956. Included also is an analysis of changes in the pattern of investment, or composition of investment of these top holders of wealth. *Published for the National Bureau of Economic Research.*

396 pages. Tables, charts. \$6.50

The Rate and Direction of Inventive Activity: Economic and Social Factors

The diversity of papers in this volume reflects the new and intensive interest in invention on the part of economists who have reawakened to the importance of invention in economic growth, industrial organization, defense economics, and management science. The topics covered range from description and analysis of the way our political economy allocates its inventive effort, to studies of the decision-making process in specific industrial laboratories. *Published for The National Bureau of Economic Research.*

680 pages. Tables, charts. \$12.50



Order from your bookstore, or

PRINCETON UNIVERSITY PRESS, Princeton, New Jersey

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

**MANAGERIAL ECONOMICS: Text and Cases**

By ERWIN E. NEMMERS, *Northwestern University*. This book is a closely integrated presentation of the entire management process from the forecasting demand, production and cost, through pricing analysis and government regulation, and, finally, to the master planning of capital budgeting. 1962. Approx. 480 pages. Prob. \$10.25*

STATISTICAL CONTROLS in BUSINESS

By FREDERICK A. EKEBLAD, *Northwestern University*. Presents many innovations in the treatment of certain problems in statistical inference that are not available elsewhere. This treatment should arouse the critical interest of all professional statisticians. The statistical method is treated as a *unified whole* rather than as a collection of miscellaneous techniques and is oriented toward the problem of uncertainty. 1962. *In press*.

MATHEMATICAL FOUNDATIONS of ADMINISTRATION

By F. PARKER FOWLER, Jr., and E. W. SANDBERG, *both of Colorado State University*. The major theme of this book is that here is a mathematics text which covers the basic mathematical subjects prerequisite to understanding modern administration thought and practice and one that is written in a manner which seeks to motivate the non-mathematically oriented student. 1962. *In press*.

OPERATIONS RESEARCH in PRODUCTION and INVENTORY CONTROL

By FRED HANSSMANN, *International Business Machines Corporation*. Presents a comprehensive, up-to-date exposition of *all* the major technical developments that have occurred in O.R. during the past decade. 1962. 254 pages. Prob. \$8.95.*

CASEBOOK in PRODUCTION MANAGEMENT

By RAYMOND J. ZIEGLER, *University of Illinois*. 1962. Approx. 168 pages. Prob. \$3.95.

OPERATIONAL RESEARCH in MANAGEMENT

By R. T. EDDISON, *M.A.*; K. PENNYCUICK, *B.Sc., Ph.D.*; and B. H. P. RIVETT, *M.Sc.* 1962. *In press*.

INDUSTRIAL DIAGNOSIS

By K. PENNYCUICK. 1962. *In press*.

**POLITICAL CHANGE in UNDERDEVELOPED COUNTRIES
Nationalism and Communism**

Edited by JOHN H. KAUTSKY, *Washington University*. 1962. Approx. 384 pages. Prob. \$4.95.

* Also available in a textbook edition for college adoption.

Send for examination copies today.

JOHN WILEY & SONS, Inc.

440 Park Avenue South, New York 16, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

OXFORD BOOKS

ECONOMICS

By Abraham L. Gitlow,
Professor of Economics, New York University

The central theme unifying this new text is a major issue of our times: the contest between a free market system and economic authoritarianism. Economic growth, full employment, national security, and social welfare are among the principal contemporary problems considered as aspects of this basic theme. A sound, up-to-date text for introductory courses in economics, the volume combines careful analysis, thorough application of economic theory, and a dynamic writing style. Chapter summaries and bibliographies are included. An excellent teaching adjunct is available in the Gitlow and Diamond: *Economics Workbook*.

1962 768 pp. 175 figs. and tables \$7.50

PROBLEMS OF AMERICAN ECONOMIC GROWTH

By Bruce R. Morris,
University of Massachusetts

1961 256 pp. paperbound
\$2.50

ESSAYS IN WORLD ECONOMICS

By J. R. Hicks,
Oxford University

1959 292 pp. \$5.00

READINGS IN ECONOMICS AND POLITICS

Edited by H. C. Harlan

1961 704 pp. paperbound
\$2.75

OXFORD UNIVERSITY PRESS

417 Fifth Avenue,
New York 16, N.Y.

JUST PUBLISHED

LECTURES ON
**The Mathematical Method
in Analytical Economics**

by **JACOB T. SCHWARTZ**
Courant Institute of Mathematical Sciences, New York University

ECONOMICS is brought to the forefront of this presentation of the role of mathematics in economic analysis. Dr. Schwartz begins his discussion, as he began the series of lectures from which this book is taken, with the Leontief input-output model that forms the framework for all which follows. An introductory statement of price theory in the Leontief model is followed by a presentation of business cycle theory along the lines pioneered by Lloyd Metzler. The author then considers the contributions of Keynes, setting forth their dynamic foundations. Finally, the discussion is consolidated into a critique of the "general equilibrium" approach which Walras built as the ultimate form of the theory of supply and demand. To place the main results of theoretical analysis in proper perspective, the author makes rather frequent reference to statistical and empirical data. The text is in the lucid, colloquial style of the lecture room.

The reader of this book should know something of the basic theory of matrices and of linear transformations, and should have a working knowledge of elementary calculus. Wherever a more abstruse mathematical theorem comes into play, however, the author provides a careful statement and a reference to its proof.

292 pages \$14.50

contents

The Leontief Model and the Technological Basis of Production

Theory of Business Cycles

Critique of the Neoclassical Equilibrium Theory. Keynesian Equilibria

Volume 1 MATHEMATICS AND ITS APPLICATIONS

Volume 1 of the companion series—*Tracts on Mathematics and Its Applications*

ECONOMIC APPLICATIONS OF THE THEORY OF GRAPHS

by **Giuseppe Avondo-Bodino**, Center for Operations Research,
Luigi Bocconi University, Milan

About 150 pages Probably \$6.50

Editorial correspondence concerning either series may be addressed to

DR. JACOB T. SCHWARTZ, Courant Institute of Mathematical Sciences,
New York University, 4 Washington Pl., New York 4

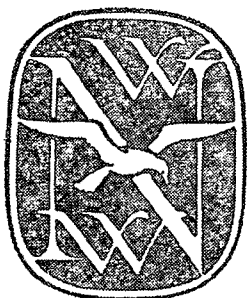
from your bookseller, or

**GORDON AND BREACH
SCIENCE PUBLISHERS**



**150 FIFTH AVENUE
NEW YORK 11, N. Y.**

Please mention **THE AMERICAN ECONOMIC REVIEW** When Writing to Advertisers



NORTON

Previews of new Spring titles . . .

THE SOVIET ECONOMY

Structure, Principles, Problems

By NICOLAS SPULBER, *Indiana University*

The first systematic analysis of the organization and functioning of the economy of the Soviet Union. Within the framework of modern economic theory, the author analyzes the basic strategy of Soviet economic development, the mechanism of Soviet planning, and the working principles behind any economy structured on the Soviet pattern.

INCOME, EMPLOYMENT AND ECONOMIC GROWTH

By WALLACE C. PETERSON,
University of Nebraska

In this unusually comprehensive aggregate theory text, extensive treatment is given to economic growth and the theory of public expenditures, and full chapters are also devoted to the impact of the foreign balance on the income level and the macroeconomic aspects of income distribution.

INTERMEDIATE PRICE AND INCOME THEORY

Revised Edition

By M. M. BOBER, *Lawrence College*

A thoroughgoing revision of a notable intermediate theory text, with broadened discussion of such subjects as the nature of economics, monopoly, the pricing of goods, and equilibrium.

. . . and a bit in its first season

PRINCIPLES OF A GROWING ECONOMY

By DANIEL HAMBERG, *University of Buffalo*

"Hamberg focuses on the major problems and shows the usefulness of analytical tools in shedding insights on the problems without cluttering up the exposition with peripheral institutional material . . . extensive use and mastery of the material in this volume would do much to raise the level of economic education."

—ROBERT T. MIKI, *Williams College*

W. W. NORTON & COMPANY, Inc.

55 Fifth Avenue, New York 3, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

NOW AVAILABLE

1961 SURVEY OF CONSUMER FINANCES

by G. Katona, C. Lininger, J. Morgan, and E. Mueller

Provides data on major consumer transactions in 1960, distribution of incomes in 1960, and of debts early in 1961, together with information on changes in consumer opinions, attitudes, and expectations in 1961.

XIV and 150 pages; 82 tables, 3 charts; \$4.00

In combination with the volume **1960 Survey of Consumer Finances** at a special pricing, the reader has available financial, demographic and attitudinal data from consumer surveys conducted by the Survey Research Center spanning sixteen years.

XXII and 310 pages, 124 tables, 13 charts

"This important volume brings together in compact and usable form a large number of significant facts concerning the financial affairs of U. S. households.

The research the results of which are presented here is of a high order. An attractive feature of the book is the tabular format which makes the tables unusually easy to consult and understand.—The detailed findings are of considerable theoretical and practical value to all students of consumer demand and to persons engaged in market research, as well as to policy makers in both business and government. The thoughtful consumer who is interested in budgeting and in evaluating his own financial status will find much in the way of guidance and assurance in the information herein presented."—FROM THE AMERICAN ECONOMIC REVIEW BOOK REVIEWS—DECEMBER 1961

BOTH VOLUMES FOR \$10.00

For the convenience of those who already have the 1960 volume, the 1961 supplement is available separately.

LOCATION DECISIONS AND INDUSTRIAL MOBILITY IN MICHIGAN—1961

by E. Mueller, A. Wilken, and M. Wood

A study of the factors which underlie location decisions based on interviews with a random sample of some 300 executives of Michigan and Ohio manufacturing plants. The locational problem is viewed broadly to include relocation, expansion, and the locus of motivational activities.

IX and 115 pages, including 42 tables

Soft Bound Edition \$2.50

Hard Cover Edition \$3.00

Orders may be placed with the Librarian, Survey Research Center

**Survey Research Center
Institute for Social Research**

**The University of Michigan
Ann Arbor, Michigan**

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

ECONOMICS of DEFENSE

The new Economics Division of the Operations Evaluation Group will appoint a limited number of imaginative economists holding advanced degrees to the staff during 1962.

They will explore new developments in applied military economics . . . often projects of their own selection . . . and within a favorable research environment. Also, individual publication in technical journals will be encouraged.

Representative problems of the division could include:

- *What is the most economical mix of weapons and delivery forces for stipulated capabilities?*
- *What criteria should determine whether the airlifting of spare parts is needed to support combat equipment?*
- *How can resources of given value contribute most to increasing fleet endurance?*

The Operations Evaluation Group . . . oldest (1942) continuing military operations research organization in this country . . . is civilian scientific advisor to the Chief of Naval Operations. OEG is a part of the Division of Sponsored Research of the Massachusetts Institute of Technology. **OEG**

OPERATIONS EVALUATION GROUP

Concourse, Arlington Towers, Arlington 9, Virginia
employment by ability without discrimination.

MONEY, BANKING, AND MONETARY POLICY

Clifton H. Kreps, Jr., *University of North Carolina*

Ready in April! This book affords the student a thorough understanding of the national economic significance of monetary and banking policy. Theory is woven throughout in a highly integrated approach to the essential principles of money and banking. Attention is thus focused on the 'why' of institutional proc-

esses rather than the 'how.' The analytical discussion of the history of money and banking development places in true perspective the complex issues of theory and policy. Book contains ample question, problem, and bibliographical materials. 1962. 600 pp. \$7.50

ECONOMIC AND SOCIAL SECURITY—Second Edition **Public and Private Measures Against Economic Insecurity**

John G. Turnbull and C. Arthur Williams, Jr., *both University of Minnesota; and*
Earl F. Cheit, *University of California, Berkeley*

Just Published! Designed for students of social insurance and social security, this book offers a thorough discussion of the various public and private measures for extending economic security. Following the carefully planned and successful pattern established in the original volume, the Second Edition retains the use of ana-

lytical tools in evaluating the private and social insurances and assistances involved in such problems as old age and death, occupational disability and non-occupational illness, unemployment, and sub-standard working conditions. 2nd Ed., 1962. 500 pp. \$8.00

MARKETING—Seventh Edition

Theodore N. Beckman and William R. Davidson, *both The Ohio State University*

Just Published! This standard textbook provides a broad understanding and appreciation of the complete marketing process, its essential economic functions, and the institutions performing them. Giving proper emphasis to the managerial viewpoint, the Seventh Edition strengthens the social and economic coverage of marketing in all its significant implica-

tions. It includes discussions of physical distribution, the significance of consumer-oriented marketing management, quantitative methods of analysis, and marketing aspects of the behavioral sciences. Ample question and problem material. *Instructor's Manual* available. 7th Ed., 1962. 790 pp., illus. \$8.00

FUNDAMENTALS OF ECONOMICS

Ruby Turner Morris, *Connecticut College*

This highly readable textbook provides a broad background in economic theory and a detailed description of how the economic order operates. Student oriented throughout, it offers a unified, balanced treatment of micro- and macro-economics; treats supply and demand, monopoly, and pure competition. Practical application of theory is stressed. The analysis is dis-

tinguished for its clarity; important interrelationships, analytical comparisons, historical references, and contemporary applications are emphasized. Hundreds of charts and graphs illustrate and focus the discussion. *Student Workbook and Instructor's Manual* available. 1961. 878 pp. \$7.00

THE RONALD PRESS COMPANY

15 East 26th Street, New York 10, New York

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

- ELEMENTS of BUSINESS ENTERPRISE.** Dwight L. Gentry and Charles A. Taff, *both University of Maryland. Instructor's Manual available.* 1961.\$7.00
- PERSONAL FINANCE.** Elvin F. Donaldson and John K. Pfahl, *both The Ohio State University. Instructor's Manual available. 3rd Ed., 1961.* ..\$7.50
- CORPORATE FINANCE.** Elvin F. Donaldson, *The Ohio State University. Instructor's Manual available. 1957.*\$7.50
- PUBLIC FINANCE.** Earl R. Rolph and George F. Break, *both University of California, Berkeley. 1961.*\$7.50
- MANAGERIAL and INDUSTRIAL ECONOMICS.** John A. Shubin, *New York University. 1961.*\$7.50
- The MANAGEMENT of PRODUCTION.** William Voris, *Los Angeles State College. 1960.*\$6.50
- ADVERTISING.** Albert Wesley Frey, *University of Pittsburgh. Instructor's Manual available. 3rd Ed., 1961.*\$7.50
- SALES PROMOTION**—Principles and Methods for Intensifying Marketing Effort. Alfred Gross, *New York University. 2nd Ed., 1961.* ...\$8.50
- SALESMANSHIP**—Principles and Practices of Professional Selling. Alfred Gross, *New York University. Instructor's Manual available. 2nd Ed., 1959.*\$7.00
- SALES MANAGEMENT.** Harold H. Maynard and James H. Davis, *both The Ohio State University. Instructor's Manual available. 3rd Ed., 1957.*\$7.50
- MARKETING MANAGEMENT.** Kenneth R. Davis, *Dartmouth College. Instructor's Manual available. 1961.*\$8.00
- RETAILING MANAGEMENT.** William R. Davidson, *The Ohio State University; and Paul L. Brown, National Coal Association. Instructor's Manual available. 2nd Ed., 1960.*\$8.00
- WHOLESALEING.** Theodore N. Beckman, *The Ohio State University; Nathanael H. Engle, University of Washington; and Robert D. Buzzell, The Ohio State University. Instructor's Manual available. 3rd Ed., 1959.* ..\$8.00
- PRINCIPLES of REAL ESTATE.** Arthur M. Weimer, *Indiana University; and Homer Hoyt, Homer Hoyt Associates. 4th Ed., 1960.*\$7.50
- INSURANCE**—Principles and Practices. Frank Joseph Angell, *New York University. Instructor's Manual available. 1959.*\$8.00
- PRINCIPLES of STATISTICAL ANALYSIS.** Samuel B. Richmond, *Columbia University. 1957.*\$7.00

THE RONALD PRESS COMPANY

15 East 26th Street, New York 10, New York

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

Important New College Textbooks

MODERN INTERNATIONAL ECONOMICS

by MAX J. WASSERMAN, Professor of Economics and Charles W. Hultman, Assistant Professor of Economics, both of the *University of Kentucky*

A fresh approach to international economics via balances of payments. An intensely practical college textbook. At the same time the theoretical parts of the book present a restatement of international trade theory tailored to requirements of a world composed of both open and partially closed economies. The book contains *several features not to be found in any other text* covering this subject.

512 pp.

6 x 9

Cloth.

\$7.75

INVESTMENTS—PRINCIPLES, PRACTICES AND ANALYSIS

(2nd Edition, 2nd Rev. Printing, 1962)

by DOUGLAS H. BELLEMORE, Professor of Finance, Graduate School of Business, *New York University*

This thoroughly revised and up-to-date textbook is intended as an introduction to the subject of investments. Investment philosophy is interwoven with a discussion of the materials and mechanics of investment. Adopted by scores of colleges and universities. Thorough coverage of the security market, techniques of security analysis and the basic mechanics of investments. Just adopted by the New York Stock Exchange as required reading for registered representative candidates.

898 pp.

6 x 9

Cloth.

\$7.50 (text edition)

\$10.00 (trade edition)

COLLECTIVE BARGAINING MANUAL

by PAUL V. JOHNSON, School of Industrial Management, *Purdue University*

A carefully designed and class-tested case in collective bargaining which traces union-management negotiations as they are actually carried on. Designed for use as supplementary material in college courses in collective bargaining.

96 pp.

5½ x 8¼

Paper.

\$2.95

URBAN GROWTH AND DEVELOPMENT— A PROBLEM APPROACH

by RICHARD B. ANDREWS, Associate Professor of Commerce-Real Estate, School of Commerce, *University of Wisconsin*

Surveys the vital problems of urban adjustment to growth in nine most controversial areas. For your course in urban land economics, urban sociology, city planning, etc.

Ca. 480 pp.

5½ x 8½

\$6.00 (Tent.)

Other recently published textbooks and references:

EQUITY FINANCING OF SMALL BUSINESS. By Professor Salomon J. Flink, *Rutgers University*. Ca. 224 pp. 5½ x 8½. \$5.00

ACCOUNTING FOR MANAGEMENT CONTROL. By Professor William H. Childs, *Hofstra College*. 714 pp. 6 x 9. \$7.75 (text edition).

ADMINISTRATIVE STRATEGY. By Professors C. T. Hardwick and B. F. Landuyt, both of the *University of Detroit*. 519 pp. 5¾ x 8. \$7.50.

FUNDAMENTALS OF PROFESSIONAL MANAGEMENT. By Professor John G. Glover, *New York University*. 406 pp. 6 x 9. \$6.50.

FUNDAMENTALS OF TRANSPORTATION. By Professor William L. Grossman, *New York University*. 284 pp. 5½ x 8½. \$5.50.

PRINCIPLES OF OCEAN TRANSPORTATION. By Professor Vernón Metcalfe, *Seattle University*. 250 pp. 5½ x 8½. \$5.50.

LABOR ARBITRATION—PRINCIPLES, PROCEDURES AND ISSUES. By Professor Maurice S. Trotta, *New York University*. 538 pp. 6 x 9. \$7.50 (text edition).

THE DEVELOPMENT OF AMERICAN INDUSTRIES. By Professors John G. Glover and Rudolph L. Lagai, both of *New York University*. 835 pp. 6 x 9. \$7.50 (text edition).

SEND FOR YOUR EXAMINATION COPIES

SIMMONS-BOARDMAN BOOKS College Division, Dept. AER

30 Church Street, New York 7, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

DEVELOPMENT OF THE SOCIAL SECURITY ACT

A Memorandum on the History of the Committee
on Economic Security and Drafting and
Legislative History of the Social Security Act

by *Edwin E. Witte*

Foreword by Frances Perkins

The Social Security Act marked the beginning of the federal government's participation in the broad range of social insurance and public welfare programs. This inside account, as recorded by its chief architect, is a valuable and instructive guide, especially in the light of today's debates on national health insurance and compulsory medical care for the aged. 224 pages, illustrated.

\$5.75



THE UNIVERSITY OF WISCONSIN PRESS

430 Sterling Court, Madison 6, Wisconsin

THE EUROPEAN COMMON MARKET

An Analysis of Commercial Policy

By *Isaiah Frank*

The author, Director of the Office of International Finance and Development Affairs in the State Department, explores the major problems of commercial policy faced by the European Common Market and analyzes the principal developments in the tariff and quota fields. "This excellent study should be read by everyone interested in European developments or in our foreign trade policies."
—*Challenge* 324 pages \$8.50

THE SOVIET ECONOMY

An Introduction

By *Alec Nove*

"This is perhaps the most balanced attempt yet in the English language to describe the Soviet economy as it is."—*The Economist* "Shrewd and well-informed . . . a realistic picture of the Soviet scene."—*The Times Literary Supplement*
328 pages \$2.25, paper; \$6.75, cloth



FREDERICK A. PRAEGER, *Publisher*

64 University Place, New York 3, N.Y.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertiser.

THE SOUTHERN ECONOMIC JOURNAL

A Joint Publication of the Southern Economic Association
and the University of North Carolina

Published Quarterly at Chapel Hill, N.C.

Volume XXVIII

January 1962

Number 3

CONTENTS

ARTICLES

- Labor Arbitration After Twenty-Five Years *Frank T. de Vyver*
Automatic Stabilizers and Business Cycle Mechanisms *M. O. Clement*
Inflation, Fluctuations, and Growth in a Dynamic Input-Output Model *C. E. Ferguson*
Recent Flows of United States Funds to Underdeveloped Countries *Harold Pilvin*
Monopoly Power and the Durability of Durable Goods *David Dale Martin*
A General Theory of Maximum Profits *Melvin L. Greenhut*
The Gold Problem Reconsidered *R. W. Trenton*

COMMUNICATIONS

- The National Balance Sheet and Anti-Depression Policies *John O. Blackburn*
Expenditure Substitution: Consumer Durables and Non-Durables *M. L. Burstein*
Firm Size and Research Activity *Ira Horowitz*

Order of Entry: The Multiple Product Firm

- A Reply *E. W. Clemens*
A Final Comment *W. David Maxwell*

BOOK REVIEWS, NOTES, BOOKS RECEIVED

Subscription price is \$6.00 per year. Single copies: current issue \$1.50,
back issues \$2.00

Address all communications and orders to Dr. James C. Ingram,
Managing Editor, The Southern Economic Journal, P. O. Box 1289,
Chapel Hill, North Carolina.

K Y K L O S

International Review for Social Sciences
Revue Internationale des Sciences Sociales
Internationale Zeitschrift für Sozialwissenschaften

Vol. XIV—1961—Fasc. 4

- Energiepolitik europäischer Industriestaaten oder europäische Industriepolitik *Edgar Salin*
The Ruin of Economy *G. L. S. Shackle*
The Concept of Economic Growth *Ronald A. Shearer*
Cumulative Causation and Growth Economics *Morris Singer*
The Marxian Model of Growth and the "General Plan" of Soviet Economic Development
..... *Ivo Moravcik*
Economic Welfareism and Public Policy *D. J. Morgan*
From Alfred Marshall to George Marshall—The Genesis of the Foreign Aid Doctrine
..... *Kurt Grunewald*
Notes on K. K. Kurihara's "Cost Disinflation and Export Expansion":
A Critique *J. Richard Huber*
A Critique *Bela Balassa*

Besprechungen—Comptes rendus—Reviews

Bibliographie—Bibliography

All articles are followed by tri-lingual summaries.

Published Quarterly. Annual subscription Swiss Fr. 26.- (postage included).

Order from your bookstore or from the publisher: KYKLOS-VERLAG, Postfach 785, Basel 2,
Switzerland.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

FOOD RESEARCH INSTITUTE STUDIES

Volume II

November 1961

Number 3

Contents

Defects, Uses, and Abuses of National Food Supply and Consumption Data
.....*Helen C. Farnsworth*

Estimation of Hedging and Speculative Positions in Futures Markets
.....*Arnold B. Larson*

A New Estimate of the National Income and Product of Cuba in 1953
.....*Harry T. Oshima*

Urban Food Expenditure Patterns in Tropical Africa
.....*Hiromitsu Kaneda and Bruce F. Johnston*

Food Research Institute Studies is published in February, May and November.
Annual subscription, \$7.00. Single copy, \$2.50.

FOOD RESEARCH INSTITUTE
Stanford University
Stanford, California

THE REVIEW OF ECONOMIC STUDIES

Volume XXIX (1), No. 78

Contents

October 1961

Chamberlin versus Chicago*G. O. Archibald*

An Econometric Model of the United Kingdom*J. Johnston*

On a Two-Sector Model of Economic Growth*Hirofumi Uzawa*

Note on Uzawa's Two-Sector Model of Economic Growth*Robert M. Solow*

A Model for the Long-Run Theory of Value*Peter Newman and J. N. Wolfe*

A Stable Adjustment Process for a Competitive Economy*F. H. Hahn*

The Social Optimum in the Presence of Monopoly and Taxation*H. A. John Green*

Aggregation Peaks and Troughs*J. Parry Lewis*

This *Journal* is published three times a year in February, June and October. The annual subscription is 32s. 6d. (U.S.A. & Canada \$5.00), single number 12s. 6d. (U.S.A. & Canada \$2.00). Orders and subscriptions may be sent to any bookseller or direct to:

OLIVER AND BOYD LTD.

Tweeddale Court, 14 High St., Edinburgh 1, Scotland

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

OXFORD ECONOMIC PAPERS

Editorial Board: N. H. Leyland (General Editor), P. D. Henderson, J. R. Hicks, C. M. Kennedy, Sir Donald MacDougall, G. B. Richardson, J. F. Wright (Secretary).

Volume 13

October 1961

Number 3

CONTENTS

- A Generalized Theory of the Effects of Tariffs on the Terms of Trade. By J. Bhagwati and H. Johnson
Notes on the Elasticity of Derived Demand. By M. Bronfenbrenner
Marshall's Third Rule: A Further Comment. By J. R. Hicks
Another Comment: By D. H. Robertson
The Interrelationship Between Cost and Price Changes 1946-1959: A Study in Inflation in Post-War Britain. By L. A. Dicks-Mireaux
Towards a Theory of Diversification. By M. R. Fisher
Income Distribution in a Two-Sector Economy. By R. M. Davis
International Trade and Technical Change. By M. V. Posner
Agricultural Production, Location and Rent. By M. Chisholm
The New Industries Between the Wars. By H. W. Richardson

Oxford Economic Papers is published three times a year in February, June and October. The pre-paid subscription price is 35s. 0d. (\$5.25) post free, and the price of a single copy 16s. 0d. net. Orders may be placed with any bookseller or sent direct to the Publisher. One specimen copy will be sent free on request.

OXFORD UNIVERSITY PRESS

AMEN HOUSE, WARWICK SQUARE, LONDON, E.C.4

ÉCONOMIE APPLIQUÉE

Archives de l'Institut de Science Economique Appliquée
(The French Journal of Economic Science)

Tome XIV—n° 4

Octobre-December 1961

- E. JAMES, Le contrôle des taux de l'intérêt.
J. DENIZET, Du nouveau dans la théorie de la demande de Monnaie.
A. COTTA, Pour une nouvelle politique monétaire.
M. NIVEAU, Politique monétaire et croissance.
C. A. THANOS, Marché monétaire et opérations d'Open Market.
O. H. ALTMAN, L'Or Russe et le Rouble.
E. JAMES, La pensée monétaire de Léon Walras.
M. RUBEL, N. McINNES, S. NA'AMAN (Textes de K. MARX et F. ENGELS) Etudes de Marxologie (S n° 4).
J. M. COLETTE, La Recherche-Développement en Grande Bretagne (T n° 2).
J. LACROIX, B. CAZES, H. NIEL, J. GUEREMY, Recherches et Dialogues philosophiques et Economiques (Cahier M n° 10).
P. DUCASSE, F. PERROUX, J. MARCZEWSKI, LE THANH KHOI, B. GILLE, C. FOLHEN: Evolution des Techniques et Progrès de l'Economie (Cahier P n° 5).
A. NOWICKI: L'Economie "Généralisée" et la pensée actuelle d'Oskar Lange (Cahier G n° 11).
J. MARCZEWSKI, La conjoncture Economique des Etats-Unis 1950-1960 (Cahier AC n° 1).

ECONOMIE APPLIQUEE et CAHIERS DE L'INSTITUT DE
SCIENCE ECONOMIQUE APPLIQUEE

- Directeur: François PERROUX; Secrétaire Général: H. BONJOUR
(I.S.E.A., 35, Boulevard des Capucines, Paris 2e).

The subscription price is 2,800 Frs. per year.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

QUARTERLY JOURNAL OF ECONOMICS
Founded 1886

LXXVI

February, 1962

No. 1

The Basic Theory of Normal Prices	<i>Joan Robinson</i>
Linear Decision Rules for Stabilization and Growth	<i>Charles O. Holt</i>
Stocks, Flows and Monetary Theory	<i>William J. Baumol</i>
Paretian Distributions and Income Maximization	<i>Benoit Mandelbrot</i>
"Inferior" Factors of Production	<i>Robert Haney Scott</i>
Petroleum Conservation in Theory and Practice	<i>James W. McKie and Stephen L. McDonald</i>
Strikes in Manufacturing, 1947-57	<i>Kenneth Alexander</i>
The Physiocratic Theory of Economic Policy	<i>Warren J. Samuels</i>
Notes and Discussions	
An Economic Justification of Protectionism: Further Comment	<i>Alexandre Kafka</i>
Recent Publications	

Edited by Arthur Smithies for the
Department of Economics, Harvard University

\$1.75 per copy; \$6.00 a year; 3 years \$17.00
Special Student Rate, \$3.00 a year

Order from **THE HARVARD UNIVERSITY PRESS**
CAMBRIDGE 38, MASSACHUSETTS

JOURNAL OF REGIONAL SCIENCE

Volume III

1961

Number 1

ARTICLES

The Territorial-Production Combination (Complex) in Soviet Economic Geography	<i>N. N. Kolosovskiy</i>
Markov Chains, Exchange Matrices, and Regional Development	<i>Paul E. Smith</i>
An Approach to the Analysis of Metropolitan Residential Extension	<i>Willard B. Hansen</i>
Warehousing with Transshipment under Seasonal Demand	<i>Charles H. Kriebel</i>
Measurement of Manufacturing: Coefficients of Correlation	<i>John W. Alexander and James B. Lindberg</i>

The *Journal of Regional Science* is published in two issues per volume by the Regional Science Research Institute, G.P.O. Box 8776, Philadelphia 1, Pennsylvania, in co-operation with the Department of Regional Science, Wharton School, University of Pennsylvania. The subscription rate for libraries, business and other organizations, and individuals is \$5.00 per volume or \$2.50 per issue. All orders should be addressed to the Regional Science Research Institute. Address all editorial communications to W. Isard and M. B. Teitz, Editors, *Journal of Regional Science*, G.P.O. Box 8776, Philadelphia 1, Pennsylvania.

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers

THE JOURNAL OF FINANCE

Published by THE AMERICAN FINANCE ASSOCIATION

Vol. XVII

March 1962

No. 1

ARTICLES

- The Role of Federal Fiscal Policy in the 1957-60 Business Cycle *Kenyon E. Poole*
Interdependence of the Utility Rate Base Type, Permitted Rate of Return, and the Utility
Earnings *David K. Eiteman*
Compensatory Cyclical Bank Asset Adjustments *Dudley G. Luckett*
Interest Rates, Contract Terms, and Allocation of Mortgage Funds *Richard Muth*
Yields on Recently Issued Corporate Bonds: A New Index *Mortimer Kaplan*
The Effects of Cash Buying and Credit Buying on Liquid Savings *Jacob Cohen and James N. Morgan*

COMMUNICATION

- Are Compensating Balance Requirements Irrational? *Richard G. Davis and Jack M. Guttentag*

Membership dues, including \$3.00 allocated to subscription in *The Journal of Finance*, are \$5.00 annually. Student subscription is \$2.00 a year. Libraries may subscribe to *The Journal* at \$5.00 annually and single copies may be purchased for \$1.25. Applications for membership in the American Finance Association and subscriptions to *The Journal of Finance* should be addressed to the Secretary-Treasurer, Robert A. Kavesh, Graduate School of Business Administration, New York University, 100 Trinity Place, New York 6, New York.

Communications relating to the contents of *The Journal of Finance* should be addressed to the Editor, Harold G. Fraire, Commerce Building, University of Wisconsin, Madison 6, Wisconsin, or to any of the Associate Editors, John G. Gurley, Department of Economics, Stanford University, Stanford, California, William W. Alberts, Graduate School of Business, University of Chicago, Chicago 37, Illinois, and Clyde W. Phelps, Department of Economics, University of Southern California, Los Angeles 7, California.

CANADIAN JOURNAL OF ECONOMICS AND POLITICAL SCIENCE

Volume XXVIII, Number 1

February, 1962

- Disraeli and the Natural Aristocracy *Albert Tucker*
Western Europe's Demand for Canadian Industrial Materials *G. L. Reuber*
Voting in the 1960 Federal By-Elections at Peterborough and Niagara Falls: Who
Voted New Party and Why? *Pauline Jewett*
The Rowell-Sirois Report, Provincial Autonomy, and Post-War Canadian Federalism *D. V. Smiley*
The Development of the Extractive Industries *Anthony Scott*
Canada's Unemployment Problem *Clarence L. Barber*
Increasing Misery of the Proletariat: An Analysis of Marx's Wage and Employ-
ment Theory *Fred M. Gottheil*
The Public Control of Broadcasting: The Canadian and Australian Experiences *W. H. N. Hull*
Time Series Analysis by Electronic Computers: A Report on Some Recent Applica-
tions at the Dominion Bureau of Statistics *R. B. Crozier and W. Darcovich*

NOTES AND MEMORANDA

- Recent Developments in the Work of the Dominion Bureau of Statistics *Marjorie Tucker*
Reply to Professors Yordon and Herrnsstadt *David Schwartzman*

Notices

David Ivor, 1912-1961

Reviews of Books

\$6.00 per year. \$1.50 per single issue

UNIVERSITY OF TORONTO PRESS

Front Campus, University of Toronto, Toronto 5, Canada

Please mention THE AMERICAN ECONOMIC REVIEW When Writing to Advertisers